REPORT RESUMES

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ABSTRACTS OF RESEARCH ON INSTRUCTIONAL TELEVISION AND FILM, VOLUME II.

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THE EXPERIMENTAL LITERATURE PERTAINING TO INSTRUCTIONAL FILM RESEARCH SINCE 1950 HAS BEEN ABSTRACTED. THE ABSTRACTS ARE PRESENTED IN TWO VOLUMES. THIS IS VOLUME TWO. (SEE ED 003 805 FOR VOLUME ONE.) (JC)

Kansas City (Mo.) Public Schools. Report of the Educational Television Project in Kansas City, Missouri Public Schools; 1958-59, 1959-60, 1960-61. Kansas City (Mo.) Public Schools, 1961. NAEB Research Fact Sheet, Series I, 110, NAEB Journal, 22 (July 1963), 1-2. (Abstract)

Problem: Comparative effectiveness of television and face-to-face instruction.

Sample: 12,000 students.

Subjects taught: History, Spanish, Science, Citizenship.

Key variables: TV teaching, face-to-face teaching, attitudes toward TV as means of instruction.

No significant differences were reported from TV and face-to-face instruction for the classes in history. TV was discovered superior to face-to-face instruction for Spanish and science. Citizenship classes had trouble accepting televised instruction and responded less favorably.

Authors conclude that TV instruction tends to be as effective as face-to-face instruction regarding learning as measured on tests.

(Study contains descriptive report of the administration of the three-year project.)

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ED 003806

Kantor, Bernard R. Effectiveness of inserted questions in instructional films. Audio-Visual Communication Review, 8 (1960), 104-108.

Problem: determine learning from films having questions inserted.

Sample: 617 seventh-grade pupils in three Los Angeles high schools.

Subject taught: the sunfish (science).

Key variables: inserting questions in the film, learning, retention, ability, age, socio-economic status, and IQ.

Three versions of the film were prepared. In one version, eight questions were inserted in the film before the content was covered and in another version the questions were inserted after the content had been covered. A control version had no questions inserted.

Pupils were assigned to one of the three screenings. All pupils took a pretest a week before the film, a parallel form posttest, and a delayed (5 week) retention test. CTMM scores, parents' occupations, age, sex, SES based on a modified Warner scale and a "language index" were available for all pupils.

Analysis of variance, covariance and t-tests indicated that pupils with a high language index had significantly higher test scores than pupils with a low language index. Pupils in higher SES levels had significantly higher test scores than pupils of average SES levels, who had significantly higher test scores than pupils in lower SES levels. There were no significant differences of pupils' scores among any of the film versions for any of the three tests taken.

Kaplan, Robert. Teaching problem-solving with television to college freshmen in health education. Unpublished Doctor's dissertation, Ohio State University, Columbus, 1962.

Problem: compare conventional with problem-solving method when both are presented via ITV.

Sample: 420 freshmen at Ohio State.

Subject taught: health education.

Key variables: conventional method and problem-solving method; multiple-choice and problem-solving measures of learning.

Eight half-hour conventional method ITV lessons and eight half-hour problem-solving method ITV lessons were prepared. Freshmen were divided into two groups. All were given a 35-item multiple-choice test and a subjective problem-solving test for pre- and posttests. Problem-solving included defining the problem, choosing the best hypothesis, and presenting supporting facts. Scale guides were devised to score the subjective test. All freshmen also took a 13-item Likert-type attitude questionnaire at the end of the quarter. Multiple-regression equations were developed using mean scores and means of gain scores, controlling for OSPE scores, age, sex, college and course grades.

There were no differences between experimental and control groups on the multiple-choice instrument, but the experimental group had significantly higher scores on the problem-solving instrument (.01 level). Multiple-choice scores and subjective problem-solving scores were related to OSPE scores (.01 and .05 level respectively). Freshmen coeds had significantly higher course grades and problem-solving scores than freshmen men.

Karsner, Milo Gist. An evaluation of motion-picture loops in group instruction in badminton. Unpublished Doctor's dissertation, State University of Iowa, Iowa City, 1953.

Problem: evaluate the effectiveness in using motion picture loops as an adjunct to teacher explanation, demonstration and student practice.

Sample: college men.

Subject taught: badminton.

Key variables: instructor explanation and demonstration, student practice and demonstration film loops; ratings, performance, and learning.

The author used three experimental situations: (1) explanation and demonstration of each stroke, by the instructor, followed by a film loop while the instructor explained the stroke being projected; (2) a film loop of each stroke while the instructor explained the stroke being projected, and (3) explanation and demonstration of all strokes, by the instructor, followed by all students practicing all the strokes, followed by all the film loops while the instructor explained the strokes being projected.

Each group, including a control group, was given pre- and posttests on badminton knowledge, motor tests, and received ratings of ability in badminton knowledge.

No significant differences were found between any of the experimental or control groups in terms of the above measurements, or by tournaments, or by questionnaires designed to measure students' motivation. It was concluded that the use of motion picture loops did not affect learning or motivation more than not using loops.

Kasten, D. F. and W. F. Seibert. A study of televised military science instruction. TVPR Report No. 9. [Lafayette] Purdue University, July, 1959. (Mimeographed)

Problem: determine students' attitudes toward ITV, and compare the relative learning of students in ITV and face-to-face classes.

Sample: 59 ITV students and 54 face-to-face students.

Subject taught: military science.

Key variables: attitudes and learning; ITV and face-to-face presentation.

All students had face-to-face instruction the first four weeks of the semester. For the last twelve weeks, 59 students received military science by a visualized ITV presentation, and 54 students continued with face-to-face instruction. The ITV instructor was a captain and the face-to-face instructor was a master sergeant.

Using ACE scores, students in both groups were divided into high-ability (126-164), medium-ability (111-126), and low-ability groups (91-110). Students took various achievement instruments and two forms of the Purdue Instructional Television Attitude Scale. (The two forms had equivalent form reliability from .74 to .89).

On four of thirteen achievement comparisons, face-to-face students' scores were significantly higher (.05 and .01 levels) than ITV students' scores. There was no significant interaction between ability level and method of instruction.

Face-to-face and ITV students tended to have neutral attitude scores on the Purdue Instrument; ITV students tended to have higher scores than face-to-face students.

Kazem, Ahmed Khairy Mohamed. An experimental study of the contribution of certain instructional films to the understanding of the elements of scientific method by tenth-grade high school biology students. Unpublished Doctor's Dissertation, University of Michigan, Ann Arbor, 1960.

Problem: compare the relative effectiveness of informational-expository and historical-dramatic films.

Sample: biology class students in four Detroit high schools.

Subject taught: science films.

Key variables: viewing two informational-expository films, viewing two historical-dramatic films, viewing one film of each category, and viewing no films; learning, sex, and ability level.

A biology class in each high school was assigned to one of the four treatments. All students took a special content test on the scientific method before and after the treatment. Students were matched on grade level, pretest score, IQ, reading ability, sex, age, and school.

Critical ratios and t-tests were used. Students in the three experimental treatment groups had significantly higher posttest scores than students in the control group. Students viewing the informational-expository film had significantly higher scores on the scientific method posttest than students viewing the historical-dramatic films, but not significantly higher than students in the combination informational-expository and historical-dramatic treatment. There were no significant differences among posttest scores of students in any of the three experimental groups. There were no significant differences in the scores of boys or girls. Above-average students made significantly higher gains between the pre- and posttest than average-ability students.

Kendler, Tracy S., John Oliver Cook and Howard H. Kendler. An investigation of the interacting effects of repetition and audience participation on learning from training films. Paper presented to American Psychological Association Convention, 1953. American Psychologist, 8 (August, 1953), 378-379. (Abstract)

Problem: to determine whether increasing relevancy of response to a training film by overt audience response increases the effectiveness of repetition of the film.

Sample: 28 high school classes.

Subject taught: map reading.

Key variables: overt audience participation, repetition of viewing, learning.

Seven groups of subjects, with four high school classes in each, were shown experimental versions of a standard military film on conventional map signs. One group saw only the introductory section of the film. The remaining six groups saw the introduction plus either one, two, or three consecutive presentations of a review. Three groups were instructed before the review showings to call out the names of the map signs as they were shown on the screen. The other three groups were given noncommittal instructions about audience participation. A test of map signs was given immediately after the last film showing to all groups and repeated to measure retention four weeks later.

Results. (1) Increasing the number of reviews seen produced higher scores with the increments decreasing with increase in showings. Difference between one review and no review was significant in favor of one review. The difference between one and three showings was statistically significant only for initial scores. (2) Overt oral responses by the audience produced increases on both initial and delayed tests, but the difference was significant only for the initial scores. (3) There was no interaction between repetition and participation.

Conclusions. (1) One review increases learning, but increases decrease when more repetitions are added. (2) Overt participation during a review increases learning.* (3) These effects decrease with repetition and intervening practice between successive showings is recommended.

[Study supported by U. S. Air Force Contract AF 18 (600)-42 Human Factors Operations Laboratories, Air Research and Development Command, Bolling Air Force Base, Washington, D. C.]

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*For further investigation of this conclusion see:

Levine, Seymour. Role of Motivation in the Effects of "Active Review on Learning from a Factual Film." American Psychologist 8 (1953), 388-89.

Ketcham, Carl H. and Robert W. Heath. An experiment to determine the effectiveness of motion pictures with sound in the teaching of material which cannot be directly portrayed in visual images. USOE Project Number 378. Tucson: University of Arizona [n.d.]. (Offset) (See Audio-Visual Communication Review, 11 (1963), 114-123.)

Ketcham, Carl H. and Robert W. Heath. The effectiveness of an educational film without direct visual presentation of content. Audio-Visual Communication Review, 11 (1963), 114-123.

Problem: determine learning from film in which visual images do not directly portray subject matter.

Sample: undergraduates at the University of Arizona.

Subject taught: William Wordsworth.

Key variables: sound track only, sound and picture, face-to-face presentation; repetition, learning, and note-taking.

Students were divided into six groups (n varied from 16 to 35 per group). One group saw and heard the film once. The second heard the sound track once. The third saw and heard the film three times. The fourth group heard the sound track three times. The fifth saw and heard the film three times and took notes. The sixth group received a conventional classroom presentation. Groups three and four were also retested.

All students took a 48-item examination on the film. Scores of verbal aptitude of the College Qualification Tests were available for all students.

An analysis of covariance controlling for verbal aptitude scores indicated a significant difference between groups (.01 level). It was concluded that a film having visual images which do not directly portray subject matter results in greater learning than sound only. Three film presentations resulted in significantly more learning than one.

Kimble, G. A. and J. J. Wulff. The effects of "response guidance" on the value of audience participation in training film instruction. Human Factors Operations Research Laboratories, USAF, Report No. 35. Audio-Visual Communication Review, 1 (1953), 292-293. (Abstract)

Problem: determine the relative effectiveness of giving guidance during participation with no guidance.

Sample: 300 AF trainees.

Subject taught: the slide rule.

Key variables: guided and unguided practice and ability level.

Trainees were divided into two groups: one saw a film having aids to the performance of correct participation responses. The other group viewed a film with no sound or visual cues to correct responses.

The guided practice group had significantly higher posttest scores than the unguided group, especially for difficult material. This was also true for examples not presented on the film and for men of both greater and of lesser ability.

King, Calvin Elijah. A comparative study of the effectiveness of teaching a course in remedial mathematics to college students by television and by the conventional method. Unpublished Doctor's Dissertation, Ohio State University, Columbus, 1959.

Problem: determine the relative effectiveness of learning by face-to-face and television presentation.

Sample: college students.

Subject taught: remedial mathematics.

Key variables: television and face-to-face presentation; students' attitudes.

Students taking Math 400 by television in one quarter were compared with students who had taken the same course by face-to-face presentation the previous quarter. All students took the Ohio State University Math Placement test as a final exam, took six attitude questionnaires during the course, and took a teacher and course evaluation questionnaire.

There were no significant differences in achievement scores of students taking the course by ITV and those who had taken it face-to-face. Television students making "D" and "E" grades preferred television less than television students making "A" and "B" grades.

Television students liked their quiz section instructors better than the face-to-face students had liked their classroom teachers. Television students thought the class was more poorly organized than face-to-face students had. Television students thought that their chance of participation was less than face-to-face students had.

Kishler, John Pullman. The differential prediction of learning from a motion picture by means of indices of identification potential derived from attitudes toward the main character. Abstracts of Doctoral Dissertations, The Pennsylvania State College, Vol. 13. State College, Pennsylvania: The Pennsylvania State College, 1951. Pp. 407-413.

Problem: determine the effect of identification with the main character in learning from a film.

Sample: 814 students in introductory psychology at Penn State.

Subject taught: film, "Keys of the Kingdom."

Key variables: identification, prestige, and learning.

All students were given a rank-order scale of the prestige of the role of "Catholic Priest," and a Thurstone-type attitude scale of religious tolerance before and after viewing "Keys of the Kingdom." Students were also given a multiple-choice instrument to measure general information from the film after the viewing.

Students who rated the role of Catholic priest as having high prestige tended to learn more from the film than those who ranked the priest's role as low.

Catholic students tended to have higher scores on the information instrument than non-Catholics.

Klapper, Hope Lunin. *Closed-circuit Television as a Medium of Instruction at New York University 1956-1957*. New York: New York University, 1958.

Problem: determine the relative effectiveness of ITV and face-to-face presentation, and assess students' attitudes.

Sample: see below.

Subjects taught: English, Man's Cultural Heritage, and History of Civilization.

Key variables: students' and teachers' attitudes, initial knowledge level, and learning, no production aids and many production aids; ITV and face-to-face presentation.

English

English composition was given the first semester; English literature was given the second semester. All students took the Cooperative English Test and the Cooperative Test on Literary Comprehension, wrote themes, and took an attitude questionnaire at the beginning and at the end of the course. The first semester, there were 116 ITV students and 115 face-to-face students; the second semester, there were 105 ITV students and 88 face-to-face students. The ITV students had a 45-minute ITV presentation and then 30 minutes of face-to-face discussion in groups of 10 to 15; the face-to-face students had a 90-minute class in groups of 25 to 30.

When first semester ITV and face-to-face students were divided into three initial knowledge level groups, *t*-tests indicated no significant differences between the two groups for each ability level on gain scores. Face-to-face students tended to have higher gains than ITV students.

When second-semester students were similarly divided into initial knowledge level groups, *t*-tests indicated only one significant difference (.05 level) between ITV and face-to-face groups, and that was for the high knowledge level, and favored ITV students. ITV students in the other two levels tended to have higher gain scores than face-to-face students.

When first-semester students were compared by theme grades, *t*-tests indicated no significant differences between ITV or face-to-face groups except that for the low initial knowledge level, face-to-face students made significantly higher gains than ITV students (.01 level).

When second-semester students were compared by theme grades, *t*-tests indicated no significant differences between groups except that in the high initial ability level, face-to-face students had significantly less lower (.01 level) theme grades than ITV students.

The author suggested that learning on ITV may partly be a function of experience.

Students of some instructors improved significantly more than did those of other instructors. Instructor may be a more important variable than method.

Participating teachers were not favorable toward ITV, but amount of antipathy varied widely.

Man's Cultural Heritage

119 students the first semester and 106 the second were divided into four sections, which met for two hours twice a week. The first semester, only a blackboard was used; the second semester, the same course was repeated using several visual-aid devices. Each section viewed a 45-50 minute ITV lecture and had the remainder of each period for discussion. All students took a 98-item objective achievement test (K-R r = .76) before and after the course, a questionnaire to assess attitudes toward ITV, and one to assess attitudes toward production aids.

Eighty-seven per cent of the second-semester students thought production aids increased course interest, and about two-thirds thought the production aids increased learning.

About 70 per cent of the students in both semesters were favorable toward the ITV course at its start; 59 per cent of the first-semester students were favorable toward the course at its end, but 90 per cent of the second-semester students were favorable toward the course at its end. The first-semester students were equally divided between choosing an ITV course and a large face-to-face course; the second-semester students preferred an ITV course over a face-to-face large lecture three to one.

Gain achievement scores of second-semester students were significantly lower than gain achievement scores of first-semester students. For both semesters, students in the low initial knowledge level had a significantly greater achievement gain than students in the middle or high initial knowledge levels. However, second-semester students had higher pretest achievement scores than first-semester students, and the test had a low ceiling.

Students of some instructors made significantly higher scores than did students of other instructors.

History of Civilization

Students were divided into six ITV sections of 21-25 students each, and one face-to-face class of 57. The ITV sections met for two-hour periods twice a week, and had a 55-minute ITV lecture followed by discussion. The face-to-face class met four times a week for one hour. Four of the discussion sections were conducted by relatively inexperienced instructors. All students took an attitude toward ITV questionnaires before and after the course. Final grades in the course served as achievement measures.

3--Klapper, Hope Lunin

Students did not generally find ITV impersonal, and were not especially concerned about the lack of personal contact. They were divided on whether not being able to ask questions was good. Initially, 77 per cent liked being enrolled in the ITV course, but at the end of the course, only 48 per cent indicated they liked it. Students were evenly divided on whether they would prefer ITV or a face-to-face large lecture. Students of one instructor were consistently and significantly more anti-ITV than were students in the other five classes. The most favorable class had no contact with the TV lecturers. The main lecturer's class did not often differ significantly in attitude from the total group.

There were no significant differences in final grades of ITV and face-to-face students.

Students in three courses were classified by observers into high, middle, or low overt attention groups. There were no significant differences in achievement among the attention groups in any of the courses.

Kraft, Mary Elizabeth. A study of information and vocabulary achievement from the teaching of natural science by television in the fifth grade. Unpublished Doctor's dissertation, Boston University, Boston, 1961. (Compare studies by Gerard T. Amirian, Homer Justin Dietmeier, and A. Cornelia Sheehan.)

Problem: compare the effectiveness of various methods of utilization of ITV in teaching fifth-grade natural science.

Sample: 90 fifth-grade classes in towns around Boston.

Subject taught: fifth-grade natural science.

Key variables: teacher training, study guide utilization, class participation, individual projects, student ability and television presentation; learning and vocabulary scores.

All pupils took two specially constructed instruments: a 75-item, multiple-choice science information test ($r_{11} = .86$) and a 150-item matching science vocabulary test ($r_{11} = .98$). These tests were given in September, December, and May. All pupils in the ninety classes viewed the thirty half-hour programs of natural science. Eighteen classes served as a control group, twenty-four classes had teachers trained in the utilization of television, twenty-four had teachers trained in elementary science, and twenty-four of the class teachers had no special training. Half of the seventy-two classes comprising the experimental group used the television series to begin the unit each day and half used the series to end the unit each day. Half the teachers received study guides and half did not. Half of the classes worked on common class assignments, and half worked on individual projects.

Class means rather than individual scores were used. Analysis of variance technique showed that all combinations of experimental variations were more effective than the control group (television alone) as measured by scores on the achievement test. Each IQ level in the experimental group showed greater gain and a greater rate of gain than the corresponding IQ level in the control group.

Those classes viewing the television series after their classroom work had higher scores on the science information test when they were given a common assignment; of the classes who viewed the series before their classroom work, those having individual assignments had higher scores on the science information test.

Vocabulary scores were not related to any specific experimental treatment or combinations.

Brighter students tended to learn more science in all groups. Gains on the science information and vocabulary tests were not related to sex or to parents' occupations.

Krebs, Robert Edward. The effects of educational films on student perceptions. Unpublished Doctor's dissertation, University of Florida, Gainesville, 1958.

Problem: determine whether education films have an effect on the similarity of viewed perceptions.

Sample: two high school chemistry classes.

Subjects taught: atomic energy and organic chemistry and petroleum.

Key variables: filmed and face-to-face presentations; learning and retention.

One group saw a series of films on atomic energy, while the other group did not. Then the groups switched and the latter group saw films on organic chemistry and the former group did not. Students took four tests before, after, and 4 weeks after the study of each topic: (1) an interpretation to projected silhouettes test, (2) a multiple-choice factual test, (3) a multiple-choice test where all the alternatives were considered correct, and (4) a mental-abilities test.

Analysis of variance, _t_-tests and _z_ tests indicated that film students tended to perceive the specific learning situation more alike than non-film students.

Students in film groups tended to perceive facts and information more the same way than non-film students. The experimental students did not have higher test scores except for topic-related responses for irrelevant silhouettes. There were no significant differences in retention scores between the two groups.

Kuipers, Ray Harry. A comparison of student perceptions of televised and conventional instruction. Unpublished Doctor's Dissertation, Wayne State University, Detroit, 1961.

Problem: compare students' motivation and reactions to face-to-face and ITV teaching.

Sample: 144 students and 283 teachers.

Key variables: face-to-face on-campus and television off-campus presentation; motivation, personal contact.

Students completed a questionnaire having twelve open-ended items and 18 five-point scale items. Teachers made written communications which were subjected to content analysis.

The author concluded that ITV off-campus students were as highly motivated as face-to-face on-campus students, that the ITV off-campus students of one professor tended to be more highly motivated than his on-campus face-to-face students, and that some teachers were more succesful than others in being able to reduce the lack of personal contact over television.

Kumata, Hideya. Attitude change and learning as a function of mode of presentation and prestige of instructor. East Lansing: Communications Research Center, Michigan State University, 1958. (Mimeographed)

Problem: determine learning, retention, and students' attitudes in face-to-face and ITV courses.

Sample: See below.

Subject taught: social science and introduction to advertising.

Key variables: learning, retention, prestige level, instructor, and attitudes; ITV and face-to-face presentation.

Social Science

840 students were in 20 sections. Independent variables were presentation method (ITV and face-to-face), perceived prestige (high, medium, low), and instructors (three different ones). Each cell of this 2x3x3 design had one section. Two other sections acted as control groups. An analysis of variance run on ACE scores indicated no significant differences between experimental and control groups. The lecture was on "power politics" and was 30 minutes long. Students took a semantic differential attitude and an achievement test immediately after the lecture. The former test had concepts of: Teaching over Television, Face-to-Face Teaching, Caste Power Pyramid, Authority, Power Politics, Oligarchical Power Pyramid, and Democratic Power Pyramid. For the first two concepts, the following adjectival scales were used: good-bad, fair-unfair, pleasant-unpleasant, valuable-worthless (evaluative); active-passive, fast-slow (activity); strong-weak, large-small (potency); interesting-dull, clear-hazy. Similar scales were used for the other concepts. The achievement test had 15 multiple-choice items. Students took the tests again eight weeks later.

Over 90 per cent of the students could identify the lecturer's prestige position. t-tests on the scales of the attitude instrument among groups indicated that ITV students thought teaching by television was clearer than either the control or face-to-face groups. For the concept Authority, both ITV and face-to-face groups were less favorable than the control group, and both were less unfavorable than the control group toward the concept Power Politics. For the concepts Caste Power Pyramid and Oligarchical Power Pyramid, the ITV and face-to-face groups were more unfavorable. Both ITV and face-to-face groups were more favorable toward the concept Democratic Power Pyramid than the control group. Both experimental groups had significantly higher learning scores than the control group.

On the immediate posttest for the concept Teaching by Television, analysis of variance generally indicated no significant differences, except that on both the activity and potency factors, a significant method of presentation and prestige level interaction was found. Students with prior ITV experience tended to be more favorable to ITV. Generally, analysis of variance showed no significant differences on the concept Face-to-Face Teaching. There were no consistent significant differences for the five concepts dealing with the subject matter. Analyses of variance for instructor evaluations revealed significant differences among the three instructors.

On the immediate learning posttest, face-to-face students had significantly higher scores than ITV students. Students of one instructor learned significantly more than students of another.

Analysis of variance run on difference scores between the immediate and delayed posttests indicated generally no significant differences for the concept Teaching by Television, except for the activity scales, where a significant method of presentation and prestige interaction was found. The only significant F ratio in the analysis of the concept Face-to-Face Teaching (difference scores) was for method of presentation and prestige interaction for the scale interesting-dull.

For the five concepts dealing with the subject matter, the most consistent significant F ratios were for instructors, prestige level, or interaction between prestige and instructor.

Neither mode of presentation seemed to favor high- or low-ability students. Face-to-face students in three ability levels tended to make higher scores than ITV students in comparable ability levels.

Introduction to Advertising

106 students were in face-to-face, instudio and ITV classes. The same instructor taught all three classes. Both ITV and face-to-face lectures had visual aids. Students had regular assignments, mid-term and final examinations, and two special quizzes. At the end of the course, students also took a semantic differential attitude instrument having the concepts Teaching by Television (with scales good-bad, easy-difficult, personal-impersonal, clear-hazy, interesting-boring, active-passive, and easy to take notes-hard to take notes); A Career in Advertising (with scales attractive-unattractive, approve-disapprove, good-bad, high prestige-low prestige, and active-passive); and The Advertising Business (with scales ethical-unethical, strong-weak, fair-unfair, good-bad, and high paying-low paying). Classes met twice a week and the course lasted for one quarter.

Analysis of variance on ACE scores indicated no significant initial differences among the three groups (face-to-face, instudio, and ITV).

Analyses of variance and a t-test indicated that face-to-face students received significantly higher grades on a copywriting problem (.05 level) than ITV students. Analysis of variance and a t-test on a special 10-item quiz indicated that face-to-face students had significantly higher scores (.05 level) than ITV students. There were no significant differences between instudio and ITV students on either of these two measures. Analysis of variance and t-tests on a special 8-item quiz indicated that both ITV and face-to-face students had higher scores than instudio students (.05 level). There were no significant differences among groups on midterm examination scores. Analysis of variance and a t-test indicated that face-to-face students had significantly higher final examination scores than ITV students. Analysis of variance and a t-test indicated that face-to-face students had significantly higher final grades in the course (.01 level) than ITV students.

Generally there were no significant differences among groups on any of the attitude concepts.

Kumata, H. Teaching advertising by television -- study II. East Lansing:
College of Communication Arts, Michigan State University [n.d.]
(Duplicated)

Problem: determine the relative effectiveness of face-to-face and ITV presentation and determine students' attitudes.

Sample: 57 face-to-face and 54 ITV students.

Subject taught: advertising.

Key variables: face-to-face instruction and ITV presentation; learning, relevant and irrelevant cues (details and principles), and attitudes.

ITV students were divided into two groups on the basis of ACE (L) scores. Half were designated an instudio group and half an ITV classroom section. Students did six assignments, took mid-term, and final examinations, and four special quizzes. One of the quizzes was a 15-item short answer test, and another quiz dealt with details and principles of advertisements. The other two quizzes were 8 and 10 items long. Students took a semantic differential instrument with three concepts: Teaching by Television, A Career for Me in Advertising, and The Advertising Profession, before and after the course. A talk-back system was available.

Analyses of variance on the six assignments indicated no significant differences among scores of students in the three groups. Analyses of variance on all four quizzes indicated no significant differences among scores of students in the three groups. For the quiz dealing with advertising details and principles, chi square indicated the face-to-face students recalled significantly more details and principles, the studio group equal amounts of each, and the ITV group recalled significantly more principles than details. The author suggested that color (details) interfered with recalling principles for the face-to-face group. Analysis of variance on the final exam grades indicated that ITV students had lower scores than instudio or face-to-face students. There were no significant differences in final grades in the course among the three groups.

There were no significant differences among groups on pretest attitude scales. Groups rated Teaching by Television as slightly good, quite passive, slightly clear, impersonal, and hard to take notes. For A Career for Me in Advertising and for The Advertising Profession, all groups were quite favorable.

_t_-tests run on difference scores for the face-to-face group on the concept Teaching by Television indicated no significant differences. For the ITV group, _t_-tests indicated a significant (.01 level) shift toward being easier to learn. For the instudio group, _t_-tests indicated significant shifts toward being more passive and easier to learn. For the concept A Career for Me in Advertising, there were no significant differences on any of the scales for both the ITV and instudio groups. The face-to-face group changed to regard the concept as significantly more attractive, better, having faster advancement, and with more approval. For the concept The Advertising Profession, both the face-to-face and the instudio groups changed to regard the concept as significantly more ethical, fairer, and better. The ITV group rated it as being significantly better than they had at the start of the course.

Lane, Bennie Ray. An experiment with programed instruction as a supplement to teaching college mathematics by closed-circuit television. Unpublished Doctor's dissertation, George Peabody College for Teachers, Nashville, 1962.

Problem: compare three methods of supplementing ITV mathematics lectures.

Sample: math students at George Peabody College.

Subject taught: Fundamental Principles of Mathematics.

Key variables: kinescope, teacher assistance, programed booklet, learning.

All pupils viewed twelve mathematics lectures on television the first part of the class period. Then for the remainder of each class period, group one viewed a kinescope of solutions of exercises and a review of concepts, group two had a teacher-led session in which the teacher answered questions and did homework problems, and group three studied a programed booklet based on assigned exercises. After the twelve lessons, all students took an achievement test and gave estimates of study time and comments about the follow-up session. The achievement test had a K-R #20 reliability of .78.

Analysis of covariance was used. Scores on the Davis Test of Functional Competence in Mathematics and the Verbal Battery of the Lorge-Thorndike had a multiple correlation with the achievement test of .80. Adjusted group means were: group one, 20.39; group two, 20.61; group three, 24.00. Differences between group three and the other two groups were significant at the .05 level.

Estimates of study time were analyzed by analysis of variance and by Kruskal-Wallis analysis of ranks. Both techniques rejected non-difference of study time estimates among groups at the .05 level. The mean study time (hours) as estimated by students in group one was 20.95; group two, 17.38; group three, 10.40.

Laner, S. The impact of visual aids displays showing a manipulative task. Quarterly Journal of Experimental Psychology, 6 (1954), 95-106.

Problem: comparative effectiveness of motion picture and filmstrip instruction.

Sample: 75 (12 university students, 63 R.A.F. men).

Subject taught: disassembly, repair, and reassembly of a window.

Key variables: intelligence, film teaching, filmstrip teaching, learning, performing a task.

Twelve students and 50 R.A.F. men viewed a sound film on the repair of a window with a broken sash cord. Thirteen R.A.F. men saw a filmstrip of the same operation and heard a recorded commentary describing the operation.

After instruction, each student in the groups was asked to demonstrate his skill in repairing the window by going to model with a broken sash cord, disassembling it, repairing the cord, and reassembling the window. In prior analysis, the author determined there were 23 suboperations necessary for correctly repairing the window. Students were rated on the number of these suboperations correctly performed and the time necessary for completion.

Results. There were no significant differences between methods of instruction which were attributable to the method of instruction. Aspects of visual aid material, such as motion and photographic realism, which are often assumed to have special cognitive value, do not play a part in the learning of a manipulative task. The intelligence of the subjects is not an important factor in learning a manipulative task.

LeAnderson, Robert Elmer. A statistical analysis of the contribution of visual materials to a unit on telephone communication. Unpublished Doctor's dissertation, Wayne University, Detroit, 1953.

Problem: determine the relative effectiveness of a manual, film, and filmstrips, separately and used together, to teach using the phone to elementary pupils.

Sample: five groups of fifth graders, from thirteen elementary schools, totaling 350 pupils.

Subjects taught: teaching use of the directory and using the phone.

Key variables: manual, film and filmstrip presentation; intelligence, reading ability and having a phone at home; using a phone directory and dialing.

Groups were equated by a phone knowledge test and an intelligence rating. A random sample (110) also took a performance test initially, which included: (1) an identification test, which, the author states, measured the ability to use the phone directory properly, and (2) a dialing test. Each group then received instruction in using the phone: one with a manual, one with a filmstrip, one with a motion picture, one group receiving all these media, and one control group. Instruction lasted for three days. The knowledge tests and performance tests were then readministered.

The multi-media group had significantly higher scores on the knowledge test than any other group. All the single-media groups had higher scores on the knowledge test than did the control group. Children not having phones in their homes made more improvement from the pre- to post-knowledge test than did those having phones. Initially, girls did better than boys, but no differences were found on the posttest. On the performance tests of identification and dialing there were no significant differences between the groups.

LeMaster, Lelan Kenneth. Filmed demonstrations with manual class demonstrations vs. conventional demonstrations in introductory woodwork. Unpublished Doctor's dissertation, Pennsylvania State University, University Park, 1961.

Problem: determine the effect of pupil learning by using film demonstrations before the instructor's demonstration.

Sample: junior high school boys.

Subject taught: industrial arts.

Key variables: film and demonstration, and demonstration-only presentations; learning and performance.

Six groups of experimental and control groups were given the Lorge-Thorndike Non-verbal Intelligence Test, the Industrial Arts test and the Manipulative Industrial Arts test, before and after the six weeks unit. During the six weeks units, instructors in the experimental groups presented eight filmed demonstrations before their personal demonstrations to the class, while the same instructors in their control classes presented their personal demonstrations only. Although students were not randomly assigned to experimental or control groups in each school, evidence indicated that the groups were similar in intelligence, technical knowledge, and skills.

On the basis of differences in scores on the three instruments, it was concluded that the film presentation helped pupils to learn more related technical information, helped pupils to use manipulation skills more effectively, and reduced the number of individual repeat demonstrations required of the instructor.

Lemke, Olga Marie. The utilization of television instruction in guidance at the sixth grade level. Unpublished Doctor's dissertation, Boston University, Boston, 1962. (See also USOE Project Number 491, Portland, Maine, [n.d.] [Mimeographed.])

Problem: determine the effectiveness of television in guidance of sixth-grade pupils.

Sample: sixth-grade pupils from ten elementary schools in Portland, Maine.

Subject taught: guidance.

Key variables: television and teacher-led presentations; personality, guidance, and socio-economic status (SES) scores.

Twenty-one ITV programs used various techniques such as role playing, panels, films, drawings, and demonstrations. Guests and peer group members were used. Pupils were divided into three groups. The ITV group received the programs with no preparation or follow-up. The teacher-led group was taught the same material by their own teachers. (Teachers were also encouraged to use any material they considered helpful.) The control group received no guidance information.

Pupils took the California Test of Personality, the Mooney Problem Check List and an informational guidance test as pre- and posttests. In addition, the Sims Score Card of socio-economic status was obtained from all pupils.

Analysis of variance technique revealed that the ITV group had significantly higher scores on the informational guidance test than the teacher-led group, and both groups had higher scores than the control group. The ITV and teacher-led group showed similar gains in adjustment as measured by the California Test of Personality, but both were higher than the control group (.05 level). Differences in kind and number of problems were associated with differences in SES, sex, and ability.

Lepore, Albert R. and Jack D. Wilson. Project Number Two: An experimental study of college instruction using broadcast television. San Francisco: San Francisco State College, 1958.

Problem: comparative effectiveness of television and face-to-face methods of instruction.

Sample: 1261 college students, 350 high school students.

Subjects taught: science, psychology, social science, English, creative arts.

Key variables: learning, TV teaching, face-to-face teaching, TV students at home, TV students on campus, students on campus, number of discussion sections per week, home and library assignments, and attitudes toward the teaching-learning process.

This study compares the performances and attitudes of three groups of students (television at home, television on the campus, and face-to-face instruction on campus) taught by the same instructor in six college-level courses. The bases for comparison are: achievement; critical thinking; self-insight; motivation; attitudes toward television, subject matter, and course content; and opportunities for friendships. Also investigated were varying amounts of discussions, demonstration activity, and home and library assignments. High school students were included in the sample to determine feasibility of using televised college courses for accelerated high school instruction. The teaching-learning process was also investigated to identify the similarities and differences in television and classroom instruction.

Six courses in major academic areas at San Francisco State College were taught through the facilities of open-circuit ETV station KQED. Students received instruction by television at their homes or in campus classrooms. Matched groups of students were taught on the campus by face-to-face methods of instruction.

In addition to the college students, the lessons were used by a group of selected high school students in eight high schools and a group of highly selected inmates of a state prison.

Comparisons for achievement were accomplished by analysis of covariance with adjustment for academic aptitude (SCAT test), grade-point average, content achievement, and motivation.

Results. Students taught by televised instruction compared favorably with students in conventional classes with respect to acquisition of information, with the exception of the creative arts class in which the conventionally taught students tended to do better than television-taught students. High, low, and average ability students learned equally well when taught by face-to-face or television methods of instruction. In the science classes, all of the various kinds of supplemental instruction (weekly discussions, biweekly discussions, demonstration activities, and home and library assignments) appeared to be equally effective with both media of instruction.

With respect to critical thinking and self-insight, both instructional media and all four forms of supplemental instruction appeared to be equally effective, but students in five of the six courses made higher, but not significantly higher, scores for self-insight when taught face-to-face.

Selected high school students in English and science tended to make smaller gains from televised instruction than did the college students with whom they were matched.

Analysis of student and teacher statements describing instruction indicated that there were more kinds of effective or ineffective teaching incidents for conventionally taught classes than for TV-taught classes. Students in both instructional media felt what the teacher did or said was important, but reacted more negatively to this emphasis in conventionally taught classes. Students noted something of value unique to each instructional media, but found less variety of satisfactions and dissatisfactions in televised instruction.

Students accepted television as a means of instruction and students who viewed at home were more positive toward television than students in television classes on campus. In a follow-up study of students who had taken the first English course in the fall by television and the second course in the spring by face-to-face instruction, there was an overwhelming preference for face-to-face instruction.

Conclusions. (1) TV is an effective means of instruction for courses in which acquisition of information is a primary goal, (2) for courses in which primary goals are direct experiences or attitude modification, the role of TV is unclear, (3) further study should be made of the effect of college instruction of high school students before beginning an intensive program, (4) television appears to be more constrictive in supplying satisfying and dissatisfying instruction experiences. Further study should be done on this aspect to determine to what extent is the material learned affected by how the learner learned to learn.

Levens, A. S. Teaching the fundamentals of orthoganol projection. USOE Contract Number G704139. Berkeley: College of Engineering, University of California [n.d.]. (Offset)

Problem: determine the effectiveness of films to teach students and teachers the thought model technique (describing objects, points, etc. in space with the hands).

Sample: 105 California college students; 12 teachers.

Subject taught: Fundamentals of Orthogonal Projection.

Key variables: teaching using the thought model method, kinescope and face-to-face presentation.

Six 25-minute kinescopes of solving problems by the thought model process were made. These were also shown to twelve teachers beforehand. Students were assigned to one of three groups: face-to-face presentation with the instructor using the thought model process, viewing the kinescopes with discussion periods following, and face-to-face presentation with the instructor using his normal teaching techniques. Students took a test following each of the six sessions.

_t_-tests indicated that students in the first group had significantly higher scores (.01 level) than those in the second, that those in the first group had significantly higher scores (.05 level) than those in the third, but that there were no significant differences between scores of students in groups two and three. There was an indication that the difference among individual teachers can be great.

Levine, Seymour. The role of motivation in the effects of "active review" on learning from a factual film. Paper presented at American Psychological Association, 1953. American Psychologist, 8 (August, 1953), 388-389. (Abstract)

Problem: effect of motivation on learning from instructional film.

Sample: 939 Air Force trainees.

Subject taught: world maps.

Key variables: viewing review showing of a film, motivation, learning.

In a previous study (Kendler, T. S. et al, Interacting effects of repetition and audience participation on learning from training films) increased learning occurred when viewer gave overt oral responses during a film review showing. Author hypothesized that increased learning was due to either active review (overt oral participation) or increased motivation to learn resulting from the review procedure. This study investigates the latter part of this hypothesis.

Four groups of eight classes of Air Force trainees viewed a film on world maps. Half the classes saw the film and had an active review. The other half saw the film with no review session following. Within these groups half the classes were highly motivated to learn by instructions prior to film showing, while the other half was under low motivation from other instructions before film showing. The active review session consisted of having the class write answers to questions on the film. Correct answers to questions were given to students after review session.

Results. (1) Significant gains in learning occurred for low-motivated, active-review students. (2) Significant, but much higher gains in learning occurred for highly motivated, active-review students.

Conclusion. Under conditions of low introductory motivation, active-review procedures can result in gains due to motivation from review session.

[Conducted under contract with Human Factors Operations Research Laboratory, U. S. Air Force.]

Levinson, Elias. Effects of motion pictures on the responses to narrative. USOE Project Number 445. New York: New York University, 1962. (Offset)

Problem: determine how junior high school students' responses to short stories are affected by seeing films of short stories.

Sample: 452 students in one school in Newark, New Jersey.

Subjects taught: O'Henry's "The Last Leaf" and "The Copy and the Anthem," Daudet's "The Last Lesson," and Poe's "The Tell-Tale Heart."

Key variables: reading the story only, reading and viewing, viewing before or after reading; ability, sex, age.

A 39-item test was constructed for each story (or film). One part of the test measured students' enjoyment and identification (empathy); another part concerned comprehension and vocabulary. An item analysis was made. K-A Intelligence tests or CTMM scores were available for all students. Students also took a standardized reading test.

Students were divided into three groups: reading only, reading then viewing, and viewing then reading. The films were shown once a week for four weeks.

Analysis of variance technique indicated that film viewing does produce a significantly different response from reading only. There were no significant differences between students' scores on the instrument in the viewing then reading or the reading then viewing groups, but viewing then reading students tended to have higher scores.

High-ability students scored significantly higher than lower-ability students, but the lower-ability students tended to have high enjoyment and identification scores. Older students scored significantly higher than younger students. Girls tended to score higher than boys. Film viewing had no significant effect on girls' viewing but had a significant effect on boys' viewing.

Levonian, Edward. Opinion change as mediated by an audience-tailored film. Audio-Visual Communication Review, 11 (1963), 104-113.

Problem: determine opinion change from a film especially produced for a given audience.

Sample: 540 UCLA students in education, psychology, public health, and business administration classes.

Subject taught: India's recent development.

Key variables: information and opinion scores, pretest immediate and delayed posttests; film presentation.

Students were divided into three groups. All students took a 36-item opinion and information questionnaire as a pretest. A week later two groups saw the film. One of these groups was given the questionnaire immediately as a posttest; the other was given the questionnaire a week later. The test-retest interval for the control group was one week.

Relative to the control group, both experimental groups showed significant (.01 level) changes in information and opinion scores. Relative to the delayed posttest experimental group, the immediate posttest experimental group showed significant changes in information and opinion scores. There were no significant differences in scores between students who gave their name and those who chose to remain anonymous.

Lofthouse, Yvonne Marie Sheriff. An experiment with closed-circuit televised instruction in teacher education. Unpublished Doctor's dissertation, Wayne State University, Detroit, 1957.

Problem: determine the relative effectiveness of learning in televised and face-to-face presentations and to determine students' attitudes toward ITV.

Sample: 56 undergraduate education students.

Subject taught: Methods and materials of the language arts.

Key variables: television and face-to-face presentation; learning and attitudes.

Students were divided into two groups, matched on ACE scores, sex, curriculum, student teaching contact, and honor point average. Each group received half a semester of ITV and half a semester of face-to-face presentation. Twenty-minute discussion periods followed each half-hour presentation. The same instructor taught both classes. All students took attitude questionnaires and an essay test. The entire essay test was taken at the beginning of the course, half the test was taken halfway through the course (when the groups switched presentation methods), and the other half was given at the end of the course.

Chi square, rank correlation, and _t_-test techniques were used. There were no significant differences in examination scores between the ITV or face-to-face groups. There were no significant differences in students' attitudes toward the course, whether it was taught on ITV or by face-to-face methods; ITV students were also critical of technical deficiencies. Students preferred face-to-face over ITV presentations when instructor and teaching methods were constant. Seventy-five per cent of the students said that limiting the discussion period to twenty minutes did not let them participate all they wanted to. Students regarded instructional procedures as being equally effective whether presented by face-to-face or by ITV methods, but regarded instructional materials as being less effective when presented by television. ITV teaching required more of the teacher's time.

Los Angeles City School Districts. An evaluation of closed circuit television for teaching junior college courses. Los Angeles: Division of Extension and Higher Education, Los Angeles City School Districts, 1957. Audio-Visual Communication Review, 6 (1958), 237. (Abstract)

Problem: determine learning from instructional television and face-to-face presentations, and to assess students' attitudes.

Sample: 270 junior high school students.

Subjects taught: physics, physical education, geography.

Key variables: television and face-to-face presentation, learning, attitudes.

The same teacher taught the television and face-to-face sections. All students took two questionnaires and were interviewed.

There were practically no significant differences in achievement scores of students in the studio, in TV classrooms, and in face-to-face presentations. Eighty-four per cent of the students thought that ITV was as good as face-to-face instruction. Forty-six per cent wished to enroll in another ITV course. ITV teachers felt that ITV was practical and usually desirable.

An evaluation of closed-circuit instructional television in Los Angeles City College and Los Angeles Valley College. Final Report. Los Angeles: Los Angeles City School Districts, 1959. (Offset)

Problem: determine the relative effectiveness of ITV and face-to-face instruction.

Sample: See below.

Subject taught: See below.

Key variables ITV and face-to-face instruction, achievement and attitudes.

Students in classes in 1957 and spring of 1958 were initially matched on Otis Quick-Scoring MA scores and on pre-course scores on a subject-matter test, and _t_-tests compared the significance of differences. Students in classes later in 1958 were not initially matched, but analysis of covariance controlling on pre-course subject-matter test scores was used.

A table of the college, the courses offered, the number of students in each treatment (when there were both ITV and face-to-face treatments), and whether posttest score differences on subject-matter instruments were significant by _t_-tests or by analysis of covariance (fall, 1958, and spring, 1959) follows.

Spring, 1957

College	Course and group		N	Significant differences (if any)
LACC	Physics 11	studio	33	none
		ITV	36	
		control	18	
	Health 10	studio	26	scores of control group were significantly greater than ITV group
		ITV	23	
		control	27	
	Health 10	ITV	31	none
		control	17	
	Geography 1	studio	33	none
		ITV	62	
		control	23	

Fall, 1957

College	Course and group		N	Significant differences (if any)
LACC	Health 10	studio	32	scores of control group were sig. higher than other two groups
		ITV	98	
		control	45	

2--An evaluation of closed-circuit instructional television in Los Angeles City College and Los Angeles Valley College.

Fall, 1957 (cont.)

College	Course and group		N	Significant differences (if any)
	Health 10	ITV	103	
		control	49	none
	Geography 1	ITV	66	
		control	27	none
	History 11	studio	31	
		ITV	156	none
		control	26	
Valley	Health 10	studio	31	
		ITV	77	none
		control	31	
	Health 10	studio	33	
		ITV	79	none
		control	35	
	History 11	studio	not usable	
		ITV	99	none
		control	29	
Spring, 1958				
LACC	Physics 11	ITV	48	
		control	24	none
	Health 10	studio	not usable	
		ITV	63	scores of control group
		control	40	were sig. higher than
				ITV group
	Health 10	studio	28	scores of studio group
		ITV	161	were sig. lower than
		control	43	scores of control group
	Geography 1	ITV	69	
		control	24	none
	History 11	studio	25	
		ITV	130	none
		control	35	

3--An evaluation of closed-circuit instructional television in Los Angeles City College and Los Angeles Valley College.

Spring, 1958 (cont.)

College	Course and group		N	Significant differences (if any)
Valley	Health 10	studio	not usable	none
		ITV	69	
		control	28	
	Health 10	studio	22	control group's scores were significantly greater than ITV group's
		ITV	86	
		control	28	

Fall, 1958

College	Course and group		N	Significant differences (if any)
LACC	Health 10	ITV	106	none
		control	38	
	History 11	studio	31	none
		ITV	80	
		control	32	
	Music 32	ITV	25	scores of control group were sig. greater than ITV group's scores
		control	60	
	Anthropl 1	ITV	63	scores of control group were sig. greater than ITV group's scores
		control	33	
	Speech 1	ITV	19	none
		control	22	
	Speech 3	ITV	32	none
		control	28	
Valley	History 12	studio	10	none
		ITV	64	
		control	35	
	Anthropl 1	ITV	85	none
		control	19	
	English 2	studio	21	none
		ITV	40	
		control	28	
	Biology 1	studio	26	none
		ITV	53	

4--An evaluation of closed-circuit instructional television in Los Angeles City College and Los Angeles Valley College.

Spring, 1959

College	Course and group		N	Significant differences (if any)
LACC	History 11	studio	27	
		ITV	128	none
		control	35	
	Anthropl 1	ITV	58	
		control	26	none
	Music 32	studio	3	scores of control group
		ITV	47	were sig. higher than
		control	51	scores of ITV group
	Speech 3	ITV	22	
		control	29	none
	Speech 1	ITV	22	
		control	19	none
Valley	Anthropl 1	ITV	91	
		control	25	none
	English 2	ITV	36	no sig. difference
		control	21	between groups in final grades
	History 12	studio	15	
		ITV	66	none
		control	31	

Students' reactions to ITV were varied. Most of the objections were from the students' inability to ask questions, or a belief that personal association with the instructor is an important part of college work. Students accepted ITV classes but preferred face-to-face classes. Students' opinions varied with the situation. Most students preferred an ITV class, if not too large, to a large face-to-face lecture class.

Television at LACC and Valley College was discontinued after the Spring, 1959 semester.

Lottes, John J., Jr. The effects of open-circuit television demonstrations of reading instruction on the observed classroom performances and attitudes of teachers. Unpublished Doctor's dissertation. Pennsylvania State University, University Park, 1961.

Problem: determine if a television series will change classroom performances or attitudes toward reading instruction of teachers.

Sample: 213 elementary schoolteachers.

Subject taught: Reading instruction.

Key variable: television presentation, classroom performance, and attitude.

All 213 elementary schoolteachers were rated on classroom performance and attitude toward the individualized approach to reading instruction. The teachers were then randomly assigned to two treatment groups. One group viewed the series on reading instruction and the control group wrote weekly reports on reading instruction. (The latter was intended as a participation variable to assess any Hawthorne effects.)

The television series consisted of fifteen half hour programs, presented one each week. After the series, all teachers were again rated on observed classroom performance and attitude toward reading instruction.

The television viewing group had a significant increase (.01 level) in performance and attitude toward reading instruction. The weekly report group had no increase and there was no significant interaction between the two treatments. The television presentations had a greater effect on changing actions and attitudes than the weekly report method did.

Lumsdaine, A. A., R. L. Sulzer and F. F. Kopstein. The influence of simple animation techniques on the value of a training film. Human Resources Research Laboratories, Report No. 24, April, 1951. Audio-Visual Communication Review, 1 (1953), 140-141. (Abstract)

Problem: determine the relative effectiveness of simple animation devices in learning from a film.

Sample: 1300 AF basic trainees.

Subject taught: the micrometer.

Key variables: animated and non-animated films, pretesting or not, three or six examples of micrometer reading, following the film with a supplementary sound slide-film; learning, and ability level.

Trainees were divided into 16 groups; each group received one of the 16 treatments resulting from the possible combinations of variables mentioned above.

Groups having the animated film learned significantly more than groups having the non-animated film, regardless of pretesting, number of examples, or whether or not they saw the supplementary film. This was true for trainees of both above- and below-average intelligence. Trainees in the lower- and middle-intelligence range may have learned most.

Lund, Kenneth W., Max D. Englehart and Mary M. Nee. Teaching algebra and physics by means of TV. Chicago School Board Journal, 38 (September, 1956), 1-9.

Problem: comparative effectiveness of TV and face-to-face teaching.

Sample: 2,405 Chicago high school students.

Subjects taught: algebra and physics.

Key variables: TV teaching, face-to-face teaching, learning, teacher, student opinions.

Ten lessons in algebra (quadratics) were broadcast open circuit to students in 34 high schools. Ten lessons in physics (machines) were also broadcast to students in the same high schools. Objective examinations were given to all students receiving televised instruction. The results of these examinations were compared to results of same examinations given students who were taught the same material at about the same time by face-to-face instruction from a lesson outline prepared by the TV instructors. The examinations were divided into two parts: Part I covered material of elementary algebra and physics in which the students had previously been instructed and served as a measure of initial achievement level; Part II covered in detail the information contained in the TV lectures and lesson guides.

Results. (1) TV instruction was as effective as face-to-face instruction in teaching both algebra and physics. All differences between adjusted scores for differing methods of instruction were non-significant but tended to favor the TV instruction. (2) Students felt that review of key points in TV presentation most helpful and classroom teachers should review lessons immediately after TV presentations. Students also expressed a need for talkback facilities with TV instructor. A minority of the students felt TV presentations were better organized, more direct, more interesting or greater incentive to learning than face-to-face instruction. (3) Classroom teachers generally felt TV instruction was less effective because too much material was covered too rapidly.

Macomber, F. Glenn and Laurence Siegel. Final Report of the Experimental Study in Instructional Procedures. Oxford: Miami University, January, 1960. (For reports on years previous to 1957-1958, see earlier reports by the same authors.)

Problem: determine the relative effectiveness of ITV and face-to-face presentations, and determine students' attitudes toward course content, instructor, ITV, and large-class instruction.

Sample: (number of ITV students first) 1957-1958: human behavior, 195 and 35; air science, 119 and 20; animal biology, 115 and 84. 1958-1959: human behavior, 205 and 42; American government, 61 and 78.

Subjects taught: See above.

Key variables: achievement and attitudes; ITV, and small- and large-class face-to-face instruction.

Students took objective subject-matter tests (K-R #21 r's generally ranged from .85 to .95), and tests of synthesis, problem solving, and critical thinking (K-R #21 r's ranged from .68 to .73). Students also took questionnaires before the course to determine their reactions to being assigned to an ITV or face-to-face situation, an attitude toward ITV and small face-to-face presentation scale (corrected split-half r = .89), and an attitude toward ITV and large face-to-face presentation Thurstone scale (corrected split-half r = .90) at the end of the course. Students also took a Thurstone scale on course content (corrected split-half r = .92) and a 24-item instructor rating scale (corrected split-half r = .91). Some students were interviewed.

t-tests on objective subject-matter instruments and on critical thinking instruments for the courses offered 1957-1958 and 1958-1959 indicated no significant differences in scores of students in small face-to-face and ITV groups. Students' attitudes in two of the courses offered those two years were significantly more favorable toward face-to-face courses than toward ITV courses. In one course, low-ability students were significantly more favorable toward the ITV course, and in another course, low-ability students were significantly more favorable toward the face-to-face course. In one course, high-ability students were significantly more favorable toward the face-to-face course. Students tended to rate the instructor more favorably when teaching face-to-face than on ITV, and two of the differences for the two-year period were significant. Generally high-ability (ACE score 65th percentile or higher) students were less favorable toward ITV than were low-ability (ACE score 35th percentile or lower) students.

Most teachers felt students learned the basic concepts as well in an ITV as in a face-to-face course. Most thought ITV was inferior to face-to-face instruction in the realization of the less tangible course objectives. They thought that they as ITV teachers had less influence on students' over-all growth and development than as face-to-face teachers.

Macomber, F. G. et al. Experimental Study in Instructional Procedures.
Oxford: Miami University, October 1, 1956.

Problem: determine the relative effectiveness of ITV and face-to-face presentations, and determine students' attitudes.

Sample: (giving the number of ITV students first): educational psychology, 97 and 62; sociology, 131 and 129; human biology, 183 and 177; physiology, 90 and 30.

Subjects taught: See above.

Key variables: learning and attitudes; ITV and face-to-face presentation.

Educational psychology students met for two weekly periods of 90 minutes each. Sociology and human biology classes met three times a week for 50 minutes each. Physiology students had three 50-minute ITV classes and one two-hour lab. Experimental and control classes of each course were matched on Cooperative English Achievement scores, Cooperative Mathematics Placement scores, ACE scores, and grade-point averages for the previous semester. K-R r's on objective test scores ranged from .48 to .94, with most of the r's in the high eighties or low nineties. At the end of the first semester, students took Thurstone-type attitude scales of the teacher's effectiveness, appraisal of the course's content, and attitudes toward ITV or face-to-face instruction. Split-half r's (corrected for length) ranged from .89 to .92.

t-tests indicated no significant differences in achievement test scores between ITV and face-to-face students, except in the human biology course, where ITV students had significantly higher scores (.001 level). There were no significant differences in achievement test scores between high-ability ITV students and high-ability face-to-face students in any of the four courses (except human biology, where ITV students had significantly higher scores at the .05 level). Similar results were obtained for low-ability students.

There was no relationship between achievement scores and attitude scores. Students rated ITV instructors at least as favorably in the ITV sections as in the control sections. Students in the control sections tended to rate the course content more favorably than students in the ITV or large-class sections. The authors state that it is possible to give a course that ITV students prefer more than face-to-face students, and vice-versa. Students preferred a small class to either an ITV or a large face-to-face class. Generally students in ITV or face-to-face classes did not differ on whether they thought they learned as much, how well their class held their attention, the amount of personal contact they had with the instructor, and how well they thought they did in their class. Students were most dissatisfied with the lack of personal contact in an ITV class. ITV students became more negative over time. This decrease in attitude was attributed to greater boredom and the greater clarity of ITV lectures. There tended to be a relation between instructor's popularity and effectiveness rating and students' attitudes toward the ITV course. Students' negative attitudes toward large lecture classes might have been a function of their low attitude toward the large lecture class instructor. There was some tendency for high-ability students to have a more negative attitude toward ITV than low-ability students.

Macomber, F. G. *et al*. *Experimental Study in Instructional Procedures*. Oxford: Miami University, October 1, 1957.

Problem: determine the relative effectiveness of ITV and face-to-face instruction, and determine students' attitudes toward course content, instructor, ITV, and teachers' attitudes about teaching on ITV.

Sample (Number of ITV students given first): human behavior, 300 and 59; physiology, 328 and 191; air science, 354 and 116; economics, 253 and 88.

Subjects taught: See above.

Key variables: achievement and attitudes; ITV and small- and large-class face-to-face instruction.

All students took the Cooperative Test of English Achievement, the Cooperative Mathematics Placement Test, and the ACE. Most classes were also matched on scores on a subject-matter pretest, sex, and rank in class.

t-tests on objective test scores indicated no significant differences between face-to-face and ITV sections for the first semester, but three of five *t*-tests (human behavior, air science, and economics) on objective test scores the second semester were significant favoring the face-to-face groups.

t-tests on problem solving and synthesis test scores indicated no significant differences between face-to-face and ITV sections except for two essays in economics class, for which the face-to-face students made significantly higher scores than the ITV students. There were no significant differences between scores of students in face-to-face or ITV classes when students were divided by ability level for economics students, either on objective or on critical thinking tests, except that high-ability ITV students had significantly lower critical thinking test scores than high-ability face-to-face students. Generally there was no relationship between attitude toward ITV and achievement.

Students completed a Thurstone-type attitude toward the course scale (corrected split-half $r = .92$) and a 24-item instructor rating scale (corrected split-half $r = .91$). Except for one class, in which face-to-face students were significantly more favorable toward the course than were ITV students, there were no significant differences between attitude scores of face-to-face and ITV students. Five questions were designed to measure students' motivation. For one question, "looked for excuse to miss class," a significantly higher percentage of ITV students responded more unfavorably than face-to-face students, for two courses. For another question, "considering vocation in the area," ITV students in one course responded significantly more favorably than face-to-face students, and exactly reverse responses were obtained in another course. ITV students had significantly lower scores on the instructor attitude instrument than face-to-face students for two courses. Students tended to prefer small face-to-face classes over ITV classes. ITV students' attitudes toward ITV became more unfavorable over time. Students' reactions toward ITV were more variable than reactions toward face-to-face classes. Attitudes toward presentation method were independent of ability, and students tended to regard the instructor variable as being more important than the method of presentation variable.

Instructors rated teaching environment features on five-point rating scales, and compared face-to-face teaching with ITV. Teachers regard ITV as a helpful aid rather than an end in itself. They felt ITV and face-to-face instruction were equal regarding the teacher's ability to animate his presentations, to make an impression on students' attitudes, and to cover the course content. Teachers felt that students learned as well in ITV as in face-to-face courses, and felt that course objectives were covered at least as well if not better in ITV sections than in large -- but not small -- face-to-face sections.

Martin, Gaither Lee, et al. Instructional closed circuit television progress report: study report number 2 for the year 1958-1959. San Jose: San Jose State College, October 16, 1959. (Mimeographed)

Problem: determine students' and teachers' reactions to ITV.

Sample: students at San Jose State College.

Subjects taught: teacher education and other observation courses, and engineering.

Key variables: attitudes.

Instructors having classes making observations reported that they were favorable (82 per cent) and that their students were favorable (75 per cent) toward ITV observations.

223 students in an engineering course filled out questionnaires at the end of each ITV lesson. Students indicated that the pace was right, the materials were effective and helped in the laboratory work, but that too long a time gap existed between ITV lessons and laboratory work.

Martin, Howard S. The relative effectiveness of teaching dramatic understanding and appreciation as compared to conventional classroom instruction. Lincoln: University of Nebraska, KUON-TV, and the Nebraska Council for Educational Television, 1961. NAEB Research Fact Sheet, Series I, 102. NAEB Journal, 21 (1962), 1-7. (Abstract)

Problem: comparative effectiveness of TV and face-to-face instruction.

Sample: 186 high school students.

Subject taught: modern American drama.

Key variables: TV teaching, face-to-face teaching, California Reading Test.

Two groups of 94 students each were matched on basis of age, sex, intelligence, and reading ability. One group was taught dramatic appreciation of the play Our Town by Thornton Wilder by reading the play and discussing it with their teacher in a face-to-face situation as written dramatic literature. The other group was taught the same written dramatic appreciation, but also saw several scenes from the play dramatized as part of a TV method of instruction. Student achievement was evaluated by administering a 91-item questionnaire to both groups.

The first three parts of the questionnaire covered each act of the play. The first seven questions for each part covered the dramatized scenes, the next seven questions tested recall of specific events in the dramatized scenes, and the last seven questions covered material in the scenes not dramatized. Part IV of the questionnaire tested students' appreciation of the dramatic point of the play. Questions were secured in part from a standardized test on the play and augmented by consultations with several English teachers in the schools. The results of the questionnaires were analyzed by a chi-square technique for students categorized by method of instruction, sex, and intelligence.

Results. (1) Students taught by TV dramatization did significantly better than students taught by face-to-face methods of instruction. (2) There was no significant difference between methods of instruction for recall of scenes not dramatized. (3) There was no significant difference between methods of instruction for recall of scenes that were dramatized. (4) Students who were taught by televised dramatizations had significantly different appreciations of the play than did students taught face-to-face. (5) Students taught by TV tended to choose dramatized scenes to illustrate answers to essay questions more than students taught face-to-face.

The author concludes that dramatized scenes stand out more vividly for students than did scenes read as written literature. TV appears to be an equally effective means of instruction compared to face-to-face instruction for teaching specific events within the play.

May, Mark A. and Nelle Lee Jenkinson. Developing interest in reading with film. Audio Visual Communication Review, 1 (1953), 159-166.

Problem: determine effectiveness in inciting students to read from a regular and a motivating film.

Sample: 480 freshmen students in 26 classes.

Subject taught: Kidnapped.

Key variables: regular and motivating film presentation, learning, reading as result of film.

Students who had never read Kidnapped or seen the movie or read a comic book of it were divided into regular film (28 minutes) and motivational film (18 minutes) groups. The first of these was the control group; the second, the experimental. Groups were matched on IQ scores, Iowa Reading Test scores, sex, size and meeting before or after lunch. Four weeks after the viewing, students took an objective pop test on Kidnapped. Also available were records of students who had checked the book out and the students' report on how much they had read.

More pupils in the experimental group checked the book from the library (.05 level). There were no differences between the number of students who had checked the book out and who indicated they read at least half or more of it. However, the control group regularly got higher scores on the objective instrument than the experimental group. This may be due to the control film being longer and providing answers to several test items.

It was concluded that film producers might encourage more reading if they produced motivational rather than story-telling films.

McClarty, Edward Leon. Auding ability related to achievement in two telecourses. Unpublished Doctor's dissertation, Stanford University, Stanford, 1957.

Problem: determine the relationship between auding and achievement.

Sample: college freshmen and sophomores.

Subjects taught: economics and psychology.

Key variables: auding, achievement; face-to-face and ITV presentation.

Achievement was determined by gains on criterion tests and course grades.

No significant relationship was found between auding ability and gains on criterion tests for any situation.

An auding-grades relationship (.05 level) was found for ITV at-home students in economics, and for all sections of economics combined (.001 level). All psychology sections combined yielded a correlation with auding ability at the .02 level.

McElroy, Clyde W. An experimental study to determine the effect of motion pictures in reinforcing instruction for the improvement of speaking techniques of students in beginning public speaking classes. Unpublished Doctor's dissertation, University of Virginia, Charlottesville, 1958.

Problem: determine the effectiveness of films as reinforcement.

Sample: 53 speech students.

Subject taught: public speaking.

Key variables: learning; face-to-face and filmed instruction.

Students were in experimental or control classes. The groups were similar in sex, age, year in school, and state of residence. The same instructor taught both groups. For each of the five films, the experimental group had discussion before and after the films. The face-to-face group had lectures on comparable material. Three judges ranked the first and last speeches of all students on a 7-point scale on content, organization, style, delivery, and general effectiveness. At the end of the experiment, students in the experimental group ranked the films in order of effectiveness and interest, and filled out an attitude toward the films questionnaire.

Analysis of variance indicated no significant differences in speech improvement on the content, delivery, organization, style and general effectiveness scales between the two groups.

Students indicated they felt the films were a helpful teaching device.

McGrane, J. F. and Morton L. Baron. A comparison of learning resulting from motion picture projector and closed circuit television presentations. Society of Motion Picture and Television Engineers Journal, 68 (1959), 824-827.

Problem: comparative learning effectiveness of film projector in classroom presentation and TV presentation of same film.

Sample: 150 students.

Subject taught: electricity (capacitance, alternating current, and inductance)

Key variables: projector in classroom, TV monitor in classroom, learning, ambient noise level.

Six groups of students, 25 in a group, were selected to receive instruction from three films about electricity. Three groups saw the films from a projector in the classroom and the other three groups saw the film over a TV system with a monitor in the classroom. Each of the film projector groups saw the film with different ambient noise levels from the projector. The ambient noise level in the TV groups was constant.

A pretest instrument was given to measure student knowledge of the material in the films before instruction. There was no significant difference between or within groups on the pretest. The same test was given as a posttest after instruction to measure learning.

Results. Using analysis of variance technique, the authors found two significant differences. Students in the two film projector-taught groups with the highest ambient noise levels learned significantly less than the lowest ambient noise level film projector group and all the TV-taught groups. The authors attribute this loss in learning to the interference of ambient noise with understanding the sound portion of the instructional films.

Conclusions. At the lowest noise level, the projector group was superior to the TV groups because the TV screen was monochrome, and the film in color, had lower resolution, and TV might be associated with entertainment and not education. At the middle-noise level for the film projector group, there was no significant difference in learning between TV and film projector presentations. When the noise level of the projector group was highest, TV instruction was superior.

McIntyre, Charles J. Training Film Evaluation: FB 254 - Cold Weather Uniforms. Technical Report SDC 269-7-51. Instructional Film Research Reports. Port Washington, N. Y.: U. S. Naval Special Devices Center. 1954.

Problem: effectiveness of humorous elements in teaching skills from a training film.

Sample: 426 trainees at Aberdeen, Maryland Proving Ground.

Subject taught: cold weather uniforms.

Key variables: film with humorous treatment, film without humorous treatment, learning, opinion questionnaire, intelligence test.

A film with a humorous treatment was used to teach proper wearing of cold weather gear. Two other versions of this same film were prepared for this experiment. One version substituted blank leader for the humor segments and the other added main titles and subheadings in place of the humor segments. Six experimental groups of recruits were chosen at random from the test sample. Four of these groups were used as (1) a control group to take content test but not to see any film, (2) a base film group to see the humorous film and take the content test, (3) a titles group to see film with titles substituted for humor and to take the test, and (4) a no titles group to see film with blank leader substituted for humor and to take the content test.

The remaining two groups saw different versions of the films in different order and were also given an opinion questionnaire to determine their subjective evaluation of the films. One group saw the base version first and then the titles version of the film and the other group saw the titles version first followed by the base version. No comparison was made between the no titles version and the other versions because the group to be used for this test was unavailable at the time of testing.

Results. The scores on the information test for the first four groups and the significance of the difference between groups is shown in the following table:

Treatment	Adjusted Mean Score	Comparison	"t"	p
Base Version	37.72	Base-Control	9.18	.01
Titles Version	39.91	Titles-Base	2.03	.05
No Titles Version	35.99	Titles-No Titles	3.60	.01
Control	25.76	Base-No Titles	1.63	NSD

Conclusions. Author states that (1) films did teach how to wear cold weather uniforms, (2) trainees learned significantly more from film with titles than film with humorous approach, (3) trainees learned significantly more from film with titles than from film with no titles, and (4) trainees did not learn more from non-titled versions than from humorous version.

Trainees learned more when humor was replaced with titles. Trainees preferred the film they saw last, in the two groups which saw two films, because the second showing was a restatement of the earlier version and therefore easier to understand.

McIntyre, Kenneth M. A study to determine specific sources of resistance to the use of audio-visual materials by college and university teachers and the development of procedures for overcoming the barriers to optimum use. USOE Grant Number 731052. Chapel Hill: University of North Carolina, 1963. (Offset)

Problem: determine the faculty's attitudes to films, ITV, and other AV material.

Sample: 174 North Carolina faculty members.

Key variables: attitudes and attitudes over time.

Faculty members filled out a 27-item Likert questionnaire in the spring of 1960 and the spring of 1961. Three of the six TV questions on the instrument showed a significant change: teachers were significantly more favorable on the pretest than posttest in believing teachers should receive royalties from ITV programs (.05 level), and feeling they did not understand all the implications involved in college ITV (.01 level). Teachers were significantly more favorable (.05 level) on the posttest than pretest in being willing to teach on TV in a TV studio.

During this study, the School of Dentistry produced a dental telecourse. The Dental School faculty had significantly higher scores than the rest of the university in every AV area investigated.

McNiven, Malcolm. Effects on learning of the perceived usefulness of the material to be learned. Technical Report SDC 269-7-54. Instructional Film Research Reports. Port Washington: U. S. Naval Special Devices Center, 1955.

Problem: effectiveness of motivation measured as perceived usefulness in learning from films.

Sample: 473 high school seniors.

Subjects taught: first-aid, atomic energy, automobile fundamentals.

Key variables: information test, film ranking, student attitude, intelligence, instructions before films are shown.

Five groups of high school students were shown three films. Groups 1, 4, and 5 saw film on first-aid, group 2 saw film on atomic energy, and group 3 saw film on automobile fundamentals.

Temporal goal distance varied for the groups 1, 4, and 5 by telling them before they saw the film different dates on which they would be tested over the information in the film. Group 1 was told nothing about date for testing, Group 4 was told they would have a test some time in the next two months, and group 5 was told they would be tested they day after the showing.

Psychological goal distance was measured by asking groups 1, 2, and 3 to rank the films in order of usefulness to them based on a brief description of the film read before showing the film. They were then assigned to see a film regardless of their ranking order of usefulness.

Design for the experiment was to (1) rank the films, (2) take information pretest, (3) see the film, (4) take an attitude-scale measuring usefulness, (5) take information posttest, and (6) take Otis IQ test. Information pretests and posttests were specially constructed multiple-choice tests. Students were asked to rank films for usefulness and interest.

Results. Analysis of covariance technique was used to compare achievement. Posttest scores were adjusted for scores on Otis IQ test and information pretest. For groups 1, 4, and 5 there was a significant difference in learning because of temporal goal distance differences. The nearer the goal for using the information the better the learning.

Analysis of the psychological goal distance differences for groups 1, 2, and 3 was achieved by correlation between the attitude-scale scores, posttest scores, pretest scores, Otis IQ scores, and film ranks. Author concluded that the attitude of perceived usefulness was an important factor in learning from the film. Individuals who saw the film they ranked highest in usefulness learned relatively more from the film than those who saw the film but ranked it low in usefulness. Correlations between the attitude scale scores and film rankings were high because, the author said, they were measures of the same variable.

Conclusions. The nearer the individual perceives himself to be to the use of information from a film, the greater the learning will be from the film.

McTavish, Chester Lynn. Effect of repetitive film presentations on learning, Abstracts of Doctoral Dissertations, The Pennsylvania State College, Vol. 16. State College: The Pennsylvania State College, 1954. Pp. 333-338.

Problem: determine learning upon repeated film showings.

Sample: 319 college freshmen, 297 high school students taking chemistry, and 366 students in ninth-grade science.

Subjects taught: electrochemistry, colloids, food and nutrition, atomic energy.

Key variables: number of film viewings, learning.

Each of the three groups (ninth graders, seniors, and college freshmen) was divided into four groups. Each subgroup saw one film one time, one film twice, one three times, and one four times, in a Latin Square design. All students took a pre- and posttest content instrument for each of the four films. Raw scores on the instruments were changed to standard scores, since the instruments varied slightly in difficulty. Scores on the instruments given after the one-viewing treatment were added across films.

Mean differences between the pre- and posttest for one, two, three, or four viewings were all significant (.001 level). There was a significant increase in learning (mean gains) of two viewings over one viewing for all levels of students (.0001 level). There was also an increase in learning (mean gain) of three viewings over two viewings (ranging from .01 level for college freshmen to .05 level for ninth-grade students). However, these mean gains were only one-fourth of the mean gains from one to two viewings. There was also an increase in learning (mean gain) of four viewings over three viewings for college freshmen and high school seniors, but these increases were not significant.

Meacham, Esther Anne. The relative effectiveness of face-to-face lecture versus instructional television in a college clothing course. Unpublished Doctor's dissertation, Ohio State University, Columbus, 1962.

Problem: determine the effectiveness of teaching a clothing course by ITV and face-to-face presentations.

Sample: 83 students.

Subject taught: Clothing: Principles of Construction.

Key variables: face-to-face and television presentation, learning performance.

The control group (n = 33) had face-to-face presentation one quarter. The experimental group (n = 50) had television presentation for thirty minutes followed by eighteen minutes of discussion led by the television teacher for one quarter. Scores on the OSPE, grade point averages, and amount of previous experience in clothing construction were available for all students. Achievement was measured by a pre and post objective information test, performance test, choice of picture test, and the Graves Design Judgment Test. Also, a test on pattern alternation was given and an evaluation of laboratory performance was made.

Multiple regression technique showed no significant differences between groups, except for the laboratory performance evaluations, which were higher for the experimental group (.05 level).

Meierhenry, W. C. A study of teaching by television under two conditions. Lincoln: University of Nebraska, 1955. Audio-Visual Communication Review, 6 (1958), 75-76. (Abstract)

Problem: determine the effectiveness of television viewed in the classroom and at home.

Sample: 24 students.

Subject taught: audio-visual materials for teachers.

Key variables: on-campus and at-home viewing; learning and attitudes.

Both groups of 12 students had 28 30-minute ITV presentations. The on-campus group had an additional 20 minutes in the classroom and an hour period of practice on equipment that the at-home group did not have.

There were no significant differences in final test scores between the two groups. The at-home group was more favorable toward ITV and did not miss the student-instructor relationship.

Mercer, John. Relationship of optical effects and film literacy to learning from instructional films. Instructional Film Research Reports, Technical Report SDC 269-7-34. Port Washington, Long Island, New York: U. S. Naval Special Devices Center, 1952.

Problem: to determine the instructional value of film production rhetorical devices.

Sample: 288 Air Force recruits, 684 Navy recruits.

Subjects taught: Air Force: Hunting Animals of the Past;
Navy: Oxygen Breathing Apparatus.

Key variables: film literacy, film optical effects, test on film content, Otis Test of Mental Ability, Naval General Classification Test.

Hypothesis to be investigated was that optical effects in instructional films would increase learning. To test this hypothesis, two groups of students were selected and the Otis Self-Administering Test of Mental Abilities given to the Air Force group and the Navy General Classification Test given to the Navy group.

The Air Force students were separated into two groups. One group received a lecture on film optical effects and then given a test of film literacy. The other group did not receive instruction in film optical effects, but was given the film literacy test to serve as a control group. Both groups were then shown the film Hunting Animals of the Past. A test of film content was then given to all students.

The Navy group was separated into two groups. One half was given the optical effects lecture and the film literacy test. The other group was not given the optical effects lecture, but was given the film literacy test as a control. Both groups saw the film Oxygen Breathing Apparatus and a test given on the film content.

Three versions of each film were constructed. Version A had no optical effects, using only cuts between scenes. Version B used the principal intersequential optical effects and Version C used all the optical effects. Each group was divided into three sections which saw one of the three versions of the film.

Results. The results of the studies, using analysis of covariance with adjustment for intelligence, were tabulated as follows:

2--Mercer, John

MEAN ADJUSTED SCORES

Study	Instruction	Version A No Effects	Version B Principal Effects	Version C All Effects	Total Group
Air Force	Lecture on film effects	35.76	37.24	36.5	36.08
	No lecture	36.84	35.75	37.58	37.16
	Total group	36.30	36.53	37.05	36.23
Navy	Lecture on film effects	22.16	22.72	22.13	22.33
	No lecture	24.14	23.10	22.97	23.29
	Total group	23.15	22.90	22.54	22.87

ANALYSIS OF COVARIANCE

AIR FORCE	df	Mean Square	F	p
Total	287			
Optical effects	2	13.76	.3261	>.05
Lecture	1	84.50	2.008	>.05
Optical v. lecture	2	142.5902	3.3797	>.05
Within groups	282	42.1903		

NAVY	df	Mean Square	F	p
Total	683			
Optical effects	2	115.0240	2.1479	>.05
Lecture	1	54.211	-1.0122	>.05
Optical v. lecture	2	97.2175	1.8154	>.05
Within groups	678	53.5526		

Merrill, Irving R. Attitude films and attitude change. _Audio-Visual Communication Review_, 10 (1962), 3-13.

Problem: to test hypotheses of the effects of an attitude film, an information film, and a non-related (control) film on attitudes about safe driving.

Sample: 181 male Navy reservists, each having one or more years of automobile driving experience.

Subjects taught: safe driving and the effect of communism in China (control).

Key variables: salience, cognitive change, affect, and rigidity.

The flexibility scale of the California Psychological Inventory, a test of salience and cognitive change, and a test of affect (Scale of Social Values) were given 181 _Ss_, who were then divided into six rigid and six flexible groups. One month later, equal numbers of groups viewed one of three 28-minute films (attitude, information, and a control film). Three rigid and three flexible groups took immediate posttests of salience and cognitive change, and of affect; the six other groups took ten-week delayed posttests.

Support was found for the hypotheses that the initial effect of the attitude film is manipulation of the cognitive, not the affective, component of attitude and that defensive avoidance occurs when strong fears are aroused by the attitude film because of its dramatic form. Rigid and flexible groups did not differ on any of the measures.

Merrill, Irving R. and Hildreth H. McAshan. Predicting learning, attitude shift, and skill improvement from a traffic safety film. Audio Visual Communication Review, 8 (1960), 263-274.

Problem: determine learning, retention, and attitude change from a film.

Sample: 165 sophomores, juniors and seniors at Michigan State University, each with one or more years of driving experience.

Subject taught: driving at night.

Key variables: learning, retention, performance, attitude change, attitude change over time, viewing related and non-related films.

Subjects saw either a driving at night film (experimental group) or a non-related film (control group). Subjects took a 40-item multiple-choice test, a semantic differential instrument with seven concepts, and a performance test involving driving at night, during which nine situations presented in the film were encountered by the subject.

Agreement of subject matter and film-production specialists' predictions of which message elements would produce learning and attitude change (immediate and after six weeks) were generally significantly greater than chance (.05 level).

Students in the experimental group had significantly higher scores (.05 level) on the multiple-choice test than the control group, on both immediate and delayed tests. No significant shifts in attitude occurred immediately after the viewing, as determined from scores on the semantic differential. Two significant (.05 level) shifts occurred at the six-week testing (for concepts Night Driving Skill and Night Driving Fatigue).

There were no gains reported in driving skill, immediate or delayed, for any of the items included in the road test.

The two panels failed to predict accurately which items actually produced greatest or least learning and attitude change.

Meyers, Lawrence, Jr. An experimental study of the influence of the experienced teacher on television. Syracuse: Syracuse University, 1961.

Problem: determine the relative effectiveness of experienced and substitute teachers.

Sample: 84 college students at Syracuse.

Subject taught: four topics on broadcasting.

Key variables: experienced (ten years teaching) and non-experienced teachers; kinescope and face-to-face presentation.

Four sets of experienced and non-experienced teachers each taught a broadcasting topic to college students. The same instructor taught a kinescope and a face-to-face section. Students were randomly assigned to face-to-face or kinescope presentations. After each lecture, and at the end of the course, students took tests involving multiple-choice items and essay questions. Students also completed several semantic differential scales relating to teacher traits and a Likert scale of attitude towards broadcasting.

Analysis of variance and t-tests indicated no significant differences in the content scores of students in lectures of experienced or non-experienced teachers. Experienced teachers seemed to be more effective in teaching critical thinking. Experienced teachers were rated significantly more authoritative, brilliant, confident, relaxed; profound, inspiring, definite, and effective.

There were no significant differences in content scores of students in the television or face-to-face treatments. Face-to-face teachers were often rated significantly higher on activity and potency adjectives. Generally there were no significant differences between activity and potency ratings of experienced television teachers and non-experienced face-to-face teachers. Students rated the concept Teaching by Television as significantly more profound, authoritative, clear, intimate, personal, and easy to take notes on the posttest than on the pretest.

Michael, Donald N. and Nathan Maccoby. Factors influencing verbal learning from films under varying conditions of audience participation. Journa of Experimental Psychology, 46 (1953), 411-418.

Problem: relative contributions of practice and motivation in learning from films.

Sample: 1,029 high school students.

Subject taught: civilian defense against atomic bombing.

Key variables: practice vs. motivation as contributors to audience participation effects in learning from films, overt vs. covert participation, practice effects and the effects of knowledge of results.

Previous research has shown that more learning from films occurs when the viewer is required to take part in an "audience participation" procedure than when he is not. This increased learning might be the result of (a) increased practice during the participation periods, and/or (b) increased motivation to learn arising from participation. The chief purpose of this experiment was to assess the relative contributions of practice and motivation factors to the increased teaching efficiency of film showings using a participation procedure. In addition, three experimental conditions were studied that were expected to affect the level of learning.

Participation Conditions

Participation occurred during practice periods alternated with sections of the film, and required the audience to answer questions asked on the content of the previous section of the film. Subjects participated by trying to answer the questions, some by writing the answers (overt practice) and some by just "thinking" them (covert practice). Under each of these conditions, half of the classes were told the correct answers after they had tried to answer the questions themselves (KCR), and half were not. Half of the classes under each pair of these conditions were told before the film began that they would be tested afterward; the other classes were not. Control groups consisted of subjects who were given the test questions but not the film, and subjects who saw the film straight through without participation (half of whom were warned they would be tested on the film content, and half of whom were not warned).

Findings

1. Within the limitations implicit in this experiment, audience participation procedures utilizing either overt or covert practice, when the participants had knowledge of the correct responses (KCR), were found to result in considerable improvement in the learning of verbal material over

that resulting from simply viewing the film. Even without the provision of the correct response, participation appears to result in better performance than no participation. This increase in learning seems to be due primarily to the effects of practice and not to the effects of changes in motivation to learn.

2. The most important factor influencing the amount of learning in this experiment was the provision of knowledge of the correct response after practice (KCR). This applies to both overt- and covert-practice conditions, and to both the more intelligent and less intelligent participants.

3. There was no significant difference between the level of learning achieved with overt practice as compared to covert practice. An unsuccessful attempt was made to provide two levels of extrinsic motivation by informing some subjects of a test to follow the film, and not informing others; no significant differences were found.

Miller, J., S. Levine and J. Kanner. A study of the effects of different types of review and of structuring subtitles on the amount learned from a training film. Memo Report No. 17. Human Resources Research Laboratories, Bolling AFB, Washington, D. C., March, 1952. Audio-Visual Communication Review, 1 (1953), 140. (Abstract)

Problem:	determine the relative effectiveness of a film which spaces reviews throughout, with a film that masses the reviews at the end, and determine the effectiveness of subtitles in structuring the film into units.
Sample:	1263 high school students.
Subject taught:	elementary electricity.
Key variables:	no review, spaced review, massed review at the end, spaced oral review (sound track only); no subtitles, five subtitles, five major and 21 minor subtitles; learning.

Each of the four review treatments was divided into the three subtitle treatments. Each of the twelve resulting presentations was shown to three high school classes. Students took pre- and posttests.

There were no significant differences between levels of learning in the subtitle treatments. Massed review treatments produced significantly greater learning than spaced or no review. The posttest scores for the spaced, no, and oral only review groups were about the same.

Minter, Philip C., Fritz A. Albert, and Richard D. Powers. Does presentation method influence film learning? Audio-Visual Communication Review, 9 (1961), 195-200.

Problem: determine learning from films with various presentations.

Sample: 185 girls in seventh-grade sewing classes in six Madison, Wisconsin, schools.

Subject taught: Aspects of sewing.

Key variables: presentation method, learning, interest, ability, order.

Four 8 to 10 minute films were made of different topics of comparable difficulty. One treatment was showing a film continuously, another treatment was stopping a film to allow for rest periods for the pupils, the third was splicing written questions and statements into the film, and the fourth was periodically stopping so that the instructor could question the pupils, and so they could take notes. All girls saw four films, one of each treatment in a Greco-Latin square design. Films were shown a week apart. All pupils took an objective test immediately after each film. The girls also filled out a questionnaire on interest in sewing and the CMMI.

Pupils who had low interest in sewing had significantly higher scores (.05 level) in the discussion-note-taking treatment than in the other three treatments. The higher ability pupils also had significantly higher scores (.05 level) in the discussion-note-taking treatment than in other treatments. There were no significant differences among interested pupils and among low-ability pupils for any of the presentation treatments.

Pupils tended to learn more from the third film that they viewed.

Mitchell, Clif. Report of the educational television project, third year: 1959-1960 in the Dade County (Greater Miami), Florida public schools. Miami: Dade County Public Schools, July, 1960. (Offset)

Problem: determine the relative effectiveness of face-to-face and ITV instruction.

Sample: See below.

Subject taught: science, history, English, and biology.

Key variables: face-to-face and ITV presentation; achievement.

Sixty-seven ITV students and 65 face-to-face students in the sixth grade took paragraph meaning, word meaning, spelling, language, arithmetic reasoning, and arithmetic computation tests before and after the course. Analysis of covariance controlling on initial achievement scores indicated that six of a possible 18 comparisons between face-to-face and ITV students in three sections had significant differences, four of which were in favor of the control group.

One hundred seventy-six ITV students and 63 face-to-face students in the seventh grade took a science instrument before and after the course. Analysis of covariance indicated no significant differences in test scores between the two groups.

One hundred fifty-nine ITV students and 69 face-to-face students in the eighth grade took a world history test before and after the course. Analysis of covariance indicated no significant differences in test scores between the two groups.

One hundred forty ITV students and 86 face-to-face students in the tenth grade took an English instrument before and after the course. Analysis of covariance indicated no significant differences in test scores between the two groups.

Seventy-six ITV students and 86 face-to-face students in the tenth grade took a biology instrument before and after the course. Analysis of covariance indicated no significant differences in test scores between the two groups.

One hundred thirty-six ITV students and 69 face-to-face students in the eleventh grade took an American history instrument before and after the course. Analysis of covariance indicated that experimental students' scores on the instrument were significantly greater than control group students.

Students in both ITV and face-to-face classes were generally matched on age and either IQ or SCAT scores.

Moldstad, John. Readability formulas and film grade-placement. Audio-Visual Communication Review, 3 (1955), 99-108.

Problem: determine the relative effectiveness of difficult, medium and simple film narrations on learning.

Sample: 255 seventh-grade pupils in a Bloomington high school.

Subject taught: life of a plant.

Key variables: narration difficulty level, learning.

Three prints of the same film were made and a magnetic sound stripe was put on each one. Three levels (fifth, seventh and eleventh grades) of narration for the film were developed, using the Dale-Chall readability formula.

Pupils were divided into three groups. All took a pretest over the content of the film and on science vocabulary. (The most difficult narration level had the highest number of difficult science words in the vocabulary test.) Each group then saw one of the three films, and took the posttest 24 hours later. Scores on the Cooperative English Test were also available for all students. Analysis of variance run on the scores of the posttests showed no significant differences among treatments on learning science facts or vocabulary. Students' scores in all groups were significantly higher on the posttest than on the pretest.

Morgan, James Donald. An investigation of pupil achievement by objective tests in the Washington County closed-circuit television project. Unpublished Doctor's dissertation, Columbia University, New York, 1962.

Problem: determine if pupil achievement increased with successive years of ITV.

Sample: pupils in Washington County.

Key variables: length of ITV instruction, televised and face-to-face presentation, and learning.

Pupils of generally urban background who made average scores or higher in arithmetic achieved an average of two months higher over a four-year period than pupils in face-to-face classes. Pupils of generally rural background who made below average scores in arithmetic achieved an average of four months higher than pupils in face-to-face classes.

This same pattern tended to persevere slightly less with pupils in junior and senior high schools.

Differences among groups having one year of ITV were not usually significant.

Mullin, Daniel W. Retention as a function of motivation and environment in educational television on the secondary school level. Unpublished Doctor's dissertation, University of Michigan, Ann Arbor, 1956.

Problem: determine the effect of motivation and environment.

Sample: eleventh-grade students.

Subject Taught: Explorations in Space.

Key variables: motivation, environment, learning, retention.

Eleventh graders coming from families of average or above-average income were divided into two groups, motivated (promise of monetary reward) and unmotivated (no reward). Half of each group saw the program in their home; half in the schoolroom. (Two other groups were "casual" viewers and non-viewers.)

Analysis of a recall instrument administered 24 hours after the telecast and two weeks afterwards revealed that scores of motivated students were higher than scores of unmotivated students (.01 level) for both immediate and delayed posttests. There were no differences in retention due to environment. Mean scores suggest that the unmotivated viewer may learn more in the classroom and the motivated viewer may learn more at home.

Muntone, John Christopher. The effects of variables in instructional television on acquisition of information and attitudes. Unpublished Doctor's dissertation, Pennsylvania State University, University Park, 1962.

Problem: determine the effects of permissive and authoritarian ITV panel discussions on information and attitudes.

Sample: about 800 sophomore students.

Subject taught: Air Science.

Key variables: permissive and authoritarian panel discussion, learning, attitude.

The control group received televised lectures and the experimental group received televised panel discussions. Members of the experimental group saw both authoritarian and permissive panel discussions. All students took an information instrument before and after each of the two presentations that the experiment covered. A semantic differential instrument and attitude check lists were administered with the posttest.

Permissive subgroups had significantly greater mean gains in information and attitude than did authoritarian subgroups. The second week, permissive, two-camera subgroup had higher scores on all measures than any other group. No relationship was found between the method of instruction and information gain.

Murp y, Francis Eugene. The relative effectiveness of filmed introductions to a general science motion picture. Unpublished Doctor's Dissertation, Boston University, Boston, 1961.

Problem: determine the relative effectiveness of various introductions to a film.

Sample: 271 seventh-grade students.

Subject taught: Learning About Light.

Key variables: introduction, learning, retention, ability, sex.

Students were randomly assigned to one of five groups: (1) received the technical vocabulary in the film as an introduction, received a description of the film and its purpose as an introduction, and received a set of questions directed at the concepts in the film as an introduction, (2) received description and vocabulary only, (3) received description only, (4) had no introduction (film only), and (5) had no film or introduction. All students took a 72-item test (K-R r = .94) to measure learning from the film immediately and after four weeks.

All film groups' scores were significantly higher than the non-film group, but there were no significant differences among the three introduction treatment groups or the film-only group. Generally there were no clear-cut significant differences between sexes. Students in groups (1) and (2) having a K-A IQ between 90-110 had significantly higher scores than similar ability students in the film-only group. There were no significant differences among treatment groups for high-ability students. Students in all film treatments had higher retention as measured by test and retest scores four weeks later.

Neale, Daniel Christopher. Observation by closed circuit television, kinescope, and classroom visitation in an introductory education course. Unpublished Doctor's Dissertation, University of Minnesota, 1961.

Problem: determine the relative effectiveness of direct observation, television and kinescope observation, and determine the effect of size of viewing group.

Sample: 258 college students in fall, 1960 and 114 students in winter, 1961.

Subject taught: observation.

Key variables: direct television and kinescope observation; size of viewing group.

Students were assigned to one of the three treatment variables. Teachers were rotated through treatment groups to balance individual effects.

Students took the MTAI, course exams, a test of attitude toward the teaching profession, and ratings of the course and on the lab sections.

Lecture hour observers rated their experiences significantly higher than did students receiving the lecture. Those who had direct observation rated their observation experience significantly higher than those who observed by television or kinescope, and those observing by television rated their experience higher than those observing by kinescope. There were no significant differences in observation ratings by students in small or large classes.

Nearing, Charles Lynn. The use of kinescope recordings for observation of classroom situations in a beginning teacher training course. Unpublished Doctor's dissertation, Michigan State University, East Lansing, 1962.

Problem: determine the effectiveness of observation by kinescopes and by classroom visits.

Sample: 418 students in a teacher-education course at MSU.

Subject taught: teacher-education observation.

Key variables: kinescope and classroom observation, course instructor, time of day, MTAI scores, attitudes toward course and toward education.

All students took the MTAI, a misconceptions of education scale, a course evaluation scale, an evaluation of observation experiences scale, and a career plans questionnaire. In addition, course grades were available for all students. Half of the students saw a two-hour program of observation kinescopes; half visited classrooms for five hours. There were no significant differences between groups on any of the six measures except for the career plans questionnaire and the evaluation of observation experiences scale. Students in the kinescope section scored higher on the former instrument and students making classroom visits scored higher on the latter. Thus there was little difference between kinescope and actual visit treatments.

Scores on the MTAI, career and course evaluation scales varied with the instructor.

Students taking afternoon sections had significantly higher course grades.

The Nebraska experimental program in the use of television and correspondence study, 1957-58. Lincoln: University of Nebraska. Audio-Visual Communication Review, 8 (1960), 240. (Abstract)

Problem: determine the relative effectiveness of television and correspondence study with face-to-face presentation.

Sample: 691 television and correspondence students and several thousand face-to-face students in large and small high schools.

Subjects taught: algebra, literature, general mathematics, physics, geometry, English, and Spanish.

Key variables: learning; face-to-face and ITV presentation.

Achievement in algebra, literature, and general mathematics was about the same for the face-to-face and television groups. On one of two final physics tests the large high school control group had somewhat higher scores than the other. The large high school control group was significantly more favorable for teaching geometry and English mechanics. Both control groups exceeded the ITV group in Spanish.

Neidt, Charles O. and Joseph L. French. Reaction of High School Students to Television Teachers. Lincoln, Nebraska: University of Nebraska, 1958.

Problem: evaluate differential reaction of students to teachers when classes are taught by television-correspondence and face-to-face methods of instruction.

Sample: 68 students.

Subjects taught: English and geometry.

Key variables: Student Expectation Scale, course ranking, Purdue Rating Scale for Instruction, attitude toward method scale, attitude toward subject scale, attitude toward teacher, semantic differential scale, activities participation scale, Wood Behavior Preference Record, and individual interviews.

An experiment involving the same two groups of high school students and teachers was designed. Two groups of high school students enrolled in plane geometry and two groups enrolled in senior English experienced one semester of television-correspondence instruction and one semester of face-to-face instruction by the same teacher in counterbalanced order. This study was part of the Nebraska In-School Television-Correspondence Study Program whose purpose was to determine the most effective combination of correspondence study and television for high schools.

Students experienced instruction according to the following design:

	TV-Correspondence	Face-to-Face
First Semester	English-Waverly Geometry-Waverly	English-Crete Geometry-Valparaiso
Second Semester	English-Crete Geometry-Valparaiso	English-Waverly Geometry-Waverly

There were 26 students enrolled in senior English at Crete and 13 at Waverly. Fifteen students were enrolled in plane geometry at Valparaiso and 22 at Waverly. The two teachers made daily trips to the school to provide face-to-face instruction. TV classes viewed lessons broadcast from KUON-TV, Lincoln, Nebraska.

2--Neidt, Charles O. and Joseph L. French

SUMMARY OF RESULTS

Student Expectation Scale. Students enrolled in both classes felt the teacher fitted their conception of "ideal" equally well when instruction was experienced by face-to-face and TV.

Ranking of Courses. Instruction method in geometry did not significantly alter the student ranking of the course according to how well they liked the course. Students taught English by face-to-face method ranked course significantly higher (.01 level) than students taught English by TV.

Purdue Rating Scale for Instruction. Students felt the English teacher showed a more liberal attitude and the presentation of subject matter was more effective in face-to-face than TV instruction. Combining the ten individual characteristics produced a significant difference favoring face-to-face instruction. None of the individual nor the combined characteristics for the geometry class was significant.

Attitude Scales. Three Liker-type attitude scales were used to measure attitude toward (1) method of instruction, (2) course, and (3) teacher.

English students reflected a significantly more favorable attitude toward methods when the course was taught face-to-face. They were more favorable toward the subject matter when taught face-to-face. The English students also reflected a significantly more favorable attitude toward the teacher during face-to-face instruction.

Geometry students held a significantly more favorable attitude toward methods during face-to-face instruction. There was no significant difference between the two conditions of course and teacher.

Semantic Differential Responses. English students perceived the teacher differently under two instructional conditions on six characteristics. In the face-to-face situations, the English students perceived their teacher as more talkative, interesting, relaxed, organized and humorous. The students perceived their teacher as being more polished in the TV situation. There were no significantly different perceptions for the geometry students in either situation.

Activities Participation Scale. Students were asked to rate their teacher with respect to how well they would like to have their teacher participate in activities with them. English students preferred to have their face-to-face teacher as a class sponsor. The mean score for the English teacher was significantly higher for the face-to-face situation than for the TV situation. There was no significant difference in preference in the geometry class for either situation.

3--Neidt, Charles O. and Joseph L. French

Wood Behavior Preference Record. The WBPR was administered in different form to each group at the beginning and end of each semester. For the English students, significant changes in "cooperation", "integrity", and "responsibility" resulted in the face-to-face situation. In the TV situation, significant changes in "leadership", "friendship", and "critical thinking" resulted.

For the geometry class, significant changes for the face-to-face situation were found for "integrity" and "responsibility". Significant changes were found for the TV situation in "leadership" and "critical thinking".

Interview Responses. Interviews, recorded on tape, were held at the end of the first semester with those students who were taught by TV and at the end of the year for all students. The results are tabulated in two forms:

1. End-of-year summaries classified by individual questions;
2. Repeated interview summaries classified by individual questions.

SUMMARY OF CONCLUSIONS

The authors summarize: "Although high school students prefer conventional instruction, it is not because they perceive the characteristics of the teacher differently in the two situations, but because of factors inherent in the instructional television situation." The authors also state the most influential factor contributing to unfavorable attitudes toward television instruction is a lack of intercommunication between students and teachers.

Nelson, Courtenay M. Effectiveness of sound motion pictures in teaching a unit on sulphur in high school chemistry. School, Science, and Mathematics, 52 (1952), 8-10.

Problem: comparative effectiveness of film and face-to-face teaching.

Sample: 39 high school students.

Subject taught: chemistry.

Key variables: learning, film teaching, face-to-face teaching.

During March, 1951, one class of students (n = 17) was taught chemistry unit on sulphur by face-to-face methods of instruction. A similar group of students (n = 22) was taught the same material by seeing two films on sulphur, sulphur mining, and sulphur compounds. On the two days the film was shown to the film group, the face-to-face group received instruction in the materials covered in the film. The sulphur unit lasted two weeks. During this time both groups received the same instruction in chemistry: the only variable was the two days of film viewing and face-to-face discussion about sulphur. At the end of the unit a comprehensive examination was given to both groups. The same test was repeated five weeks later to measure retention.

Test and retest data were analyzed by analysis of covariance adjusting for (1) total grade-point average of freshman and sophomore courses; (2) IQ from California Test of Mental Maturity, and (3) scores from previous chemistry tests. Significant differences were found for the comparison of the end test which favored the film-taught group and for the retention test which also favored the film-taught group. The amount of loss for both groups from test to retest was not significant when compared on basis of instructional methods.

The author concludes that instructional films are a useful tool for teaching chemistry units to high school students.

Nelson, Harold. The use of closed circuit television in teaching the basic course in Speech. The Speech Teacher, 7 (1958), 1-5.

Problem: comparative effectiveness of TV and face-to-face instruction.

Sample: 117 TV taught, 181 face-to-face taught.

Subject taught: Basic Speech.

Key variables: learning, TV teaching, face-to-face teaching, student opinion, teacher opinion.

Two groups of students were taught basic speech. One group of six sections was taught by closed-circuit television with three sections supervised by full-time faculty members and three sections supervised by graduate assistants. The other group of six sections was taught face-to-face. Lectures for the TV sections were presented to all TV sections by a member of the full-time staff. Supervisors of the TV sections used the TV facilities to demonstrate speech methods and to allow students an opportunity to demonstrate their speaking ability to other classes. One of the TV sections was taught in a "democratic" manner by a student from the class serving as chairman with textual assignments made from a syllabus prepared by the instructor. Standards of performance were established by the instructor. Students were then allowed to reach goals without direct supervision. The instructor viewed class sessions by television to determine ability to supervise a speech class from a remote location. A part of this study was to also measure the effectiveness of allowing students to adapt speeches to an audience of students only. Students from other TV sections were regularly assigned performance speeches on TV so other sections could observe their progress.

2--Nelson, Harold

Results. Achievement was measured by comparison of the per cent of students receiving grades of A to F for methods of instruction. These grades were distributed as follows:

Instruction	N	A	B	C	D	F
TV Taught	117	3.4%	29%	60.7%	6%	0.7%
Face-to-face Taught	181	2.8%	28%	62%	5%	1.7%

Sixty-two per cent of the students taught by TV approved of TV as a means of instruction and 21 per cent disapproved of TV as a means of instruction. Instructors were in favor of the TV teaching and reported a shift in student attitude from negative to positive toward TV as means of instruction by the end of the semester. Students in the instructor-less classroom were generally in favor of continuing this type of instruction and would enroll in a course taught the same way next semester.

Nelson, H. E. and A. W. VanderMeer. Relative effectiveness of differing commentaries in an animated film on elementary meteorology. Technical Report SDC 269-7-43. Instructional Film Research Reports, Port Washington: U. S. Naval Special Devices Center, 1955.

Problem: effectiveness of improving language intelligibility of film narrations.

Sample: 291 students.

Subject taught: meteorology.

Key variables: learning, basic film, film with narration's intelligibility improved.

Four versions of an instructional film on meteorology were produced. The first version was similar to the original version from the producers, but the sound track was recorded by a meteorologist instead of the professional announcer previously used. The second version used personalized commentary with a simpler and smoother reading language. The third version used vivid descriptive words, common similes, and a personalized narration. The fourth version emphasized the visual elements of the film in the narration.

Two tests of learning were constructed: (1) was a 64-item multiple-choice information test and (2) was a diagram test in which the student chose the correct diagram from several possible choices. (KR test reliabilities for Test I for each version were: .91, .83, .86, and .86 respectively. KR test reliabilities for Test II for each film version were: .84, .78, .83, and .63 respectively.)

Ten sections of 529 men enrolled in Air Force R.O.T.C. were used as subjects. Mean scores on ACE Psychological Examination for College Freshmen ranged from 119 to 126 for the subjects. After equating scores on the ACE examination for experimental and control groups, and eliminating students with prior instruction in the subject taught, 219 students remained. Each group of students was shown one version of the film, or heard the film sound tracks. Two comparisons were made: (1) between versions of the film, and (2) between version 2 of the film and sound track only groups.

Results: (1) All of the modified commentaries were superior to the original version, but the differences were non-significant. (2) Students who did not see the film, but heard only the sound track scored only 1/5 lower than the best scores of the groups which saw the films. (3) There was no significant difference between scores on the verbal and diagrammatic tests for differing methods of instruction. (4) The best configuration of variables for maximum learning was (a) presentation of new information both visually and aurally, (b) narration references to visual information, (c) repetition of facts, and (d) use of vivid, personal commentaries.

Neu, D. Morgan. The effects of attention-gaining devices on film-mediated learning, Abstracts of Doctoral Dissertations, The Pennsylvania State College, Vol. 13. State College: The Pennsylvania State College, 1951. Pp. 414-417. (See also Journal of Educational Psychology, 42 (1951), 479-490; Technical Report SDC 269-7-9, Port Washington, Long Island: U. S. Navy, Special Devices Center, 1950.)

Problem: determine if learning from a short film is increased if filmic devices are used to gain attention at important points.

Sample: 2631 army and navy recruits.

Subject taught: precision instruments.

Key variables: visual and sound, relevant and irrelevant film devices to attract attention, learning of information and recognition and recall of devices.

The sample was divided into six groups. One group saw the film with visual relevant devices, one with visual irrelevant devices, one with sound relevant devices, one with sound irrelevant devices, and one control group, which did not see the film. All subjects took a 25-item multiple-choice information test after the film (K-R r = .94), and a test on recognition or recall of the attention-getting devices. Scores on the first test were adjusted for scores on a mental ability and a mechanical aptitude test by analysis of covariance.

The mean of all film groups was significantly greater than that of the control group. All film groups had higher scores on the information test than the sound irrelevant group. Generally, there were no other differences between groups.

There was a small correlation between scores on the information test and scores on the recall of devices test.

It was concluded that attention-gaining devices which do not add any additional information do not increase learning from a film.

Noall, Matthew F. and Lerue Winget. Staff utilization studies help Utah educators, B. The physics film project. National Association of Secondary School Principals Bulletin, 43 (1959), 183-195.

Problem: effectiveness of films for teaching in schools with inadequately prepared instructors.

Sample: 20 high schools.

Subject taught: physics.

Key variables: learning, film teaching, face-to-face teaching, subject knowledge, study habits, mental ability, student interests, classroom size.

Ten experimental (film-taught) and ten control (face-to-face taught) schools were used to determine the feasibility of using the film series Harvey White Physics in schools with inadequately prepared instructors and ill-equipped laboratories. Very large interschool differences prevented matching groups. Achievement was compared within subgroups of school size. The only significant difference in achievement due to method of instruction was found in the medium-sized schools where face-to-face taught students did significantly better than film-taught students. There were no significant differences in student motivation or drop-out rate for methods of instruction in all sizes of schools. There was some indication, non-significant, that medium-ability students learn more from film instruction than from face-to-face instruction.

Student and teacher responses to a questionnaire showed positive satisfaction with the film experiment. Student responses were usually favorable and teacher responses were tempered by individual training and experience in teaching physics.

Conclusions. Physics can be successfully taught with films. Achievement is more related to student ability than method of instruction. The films have enrichment value in schools with trained instructors. Schools with untrained instructors and ill-equipped laboratories can use the films as a basic departure point for physics instruction.

The North Carolina In-school Experiment. 1958-59. University of North Carolina, 1959. NAEB Research Fact Sheet, Series I, 85. NAEB Journal, 19 (July 1960), 1-2. (Abstract)

Problem: comparative effectiveness of TV and face-to-face teaching.

Sample: 12,000 students.

Subjects taught: Grade 11 American History, Grade 10 World History, Grade 9 Physical Science, Grade 8 Mathematics.

Key variables: TV teaching, face-to-face teaching, learning.

Students in 114 classes in 81 schools were taught subject matter by open-circuit TV in groups of 90 to 200. These students, as well as similar groups of students who were taught the same subjects in the same schools face-to-face, were given standardized tests of subject matter in September. Lessons were broadcast over WUNC-TV (Chapel Hill) and six other commercial TV stations to cover experimental schools. Lessons were made in the studio and on outside locations, through use of a TV mobile unit, such as libraries, museums, and legislative halls.

In May a different form of the standardized tests was given to all students, TV- and face-to-face taught, who participated in the experiment. In comparing the scores for the methods of instruction, significant differences were found favoring the TV-taught groups for American history, general science, and mathematics. Other differences were not significant. Analysis of covariance with an adjustment for pretest scores was the technique used to compare groups. The conclusion of the Educational Testing Service was that "TV instruction in the North Carolina experiment is, on balance, more effective than conventional [face-to-face] instruction."

Northrop, Dean S. Effects on learning of the prominence of organizational outlines in the instructional film. Technical Report SDC 269-7-33 Instructional Film Research Reports, Port Washington: U. S. Naval Special Devices Center, 1952.

Problem: learning effectiveness of titles and subheadings for instructional films.

Sample: 1,547 naval recruits.

Subjects taught: chemical warfare, fire control, survival.

Key variables: original film, film with no titles, film with titles and subheadings, learning, intelligence.

Recruits were divided into 12 groups, chosen to be matched on basis of Naval General Classification Test. Three versions of each film were prepared: (1) the original version with no titles, (2) a version with titles and mainpoint outline added, and (3) a version with titles, mainpoint and subpoint outline added. The three films chosen were: (1) Chemical warfare: Prepare for Gas as a discrete item type of film with independent facts without internal structure, (2) fire control: Chemistry of Fire as a logical development type of film with dependent facts and internal structure, and (3) Survival: The Castaways, Part I as a chronological development type of film with dependent facts and internal relationships.

Results. The scores for tests of film content for each type of showing were:

TITLE	N	ADJUSTED MEAN TEST SCORES			
		No film	original	main topics	subheads
Gas Warfare	120	18.35	36.20	39.04	39.94
Fire Control	124	22.27	40.62	39.29	38.61
Survival	100	20.11	43.21	43.80	44.08

2--Northrop, Dean S.

Using analysis of covariance technique the mean test scores for two of the three films (Gas Warfare and Survival) showed a tendency to increase as the amount of outlining increased, but a reverse tendency was found for one film (Fire Control). The results were statistically significant only for the Gas Warfare film since the only significant differences were in favor of both outlined versions of the film over the non-outlined original version.

These results indicate that the organizational outline of an instructional film may be expected to increase learning from the film, if the film is not inherently organized. The negative effect of outlining on learning for the fire control film was attributed to the interference of the outlining with the highly organized original film presentation.

The authors noted that most of the learning increases (four out of six comparisons) came from students in the less intelligent half of the class.

Nunnally, Nancy. Primary films as a factor in promoting conceptual and factual learnings in kindergarten children. Unpublished Doctor's dissertation, Indiana University, Bloomington, 1955.

Problem: determine how much children learn from films, and the relationship of film learning to reading readiness and family socio-economic status.

Sample: 60 kindergarten children randomly selected from four large city schools.

Subject taught: two children's films, one about a deer and one about a rabbit.

Key variables: learning, reading readiness, and socio-economic status.

All children were given two tests of learning proficiency, a reading readiness test, and were interviewed to determine other aspects of their family life. Children were given a pretest before seeing each of the two films and were given a posttest the same day after seeing each film.

All children learned from the films; they learned significantly more from the unfamiliar film than from the familiar film. This result was to be expected since learning was defined as the amount of increase from pretest to posttest scores. Scores of learning from films correlated with reading readiness scores. Measures of attending movies, watching constructive TV programs and hearing stories were all correlated with scores of ability to learn from films. Children's socio-economic status ratings correlated little or none with scores of ability to learn from films.

Ortgiesen, Leroy. The relative effectiveness of selected filmstrips and sound motion pictures in teaching soil conservation in ninth-grade social studies classes. Unpublished Doctor's dissertation, University of Nebraska, Lincoln, 1954.

Problem: compare 35mm silent filmstrips and sound motion pictures in teaching and changing attitudes toward soil conservation to ninth-grade social studies classes.

Sample: 753 students from seven schools.

Subject taught: soil conservation.

Key variables: filmstrips, sound motion pictures, quantity of students' reading, printed instructional materials, attitudes, learning.

The 753 students were divided into three groups: One group received the eight filmstrips and printed materials, one group received the filmstrips, five motion pictures and printed materials, and the control group received the printed materials. When possible, the same teacher taught both an experimental and a control group.

Attitude and knowledge instruments were developed and reliabilities obtained by split-half methods.

Analysis of covariance and t-tests were used. From analysis of the scores on the constructed instruments, the authors concluded that educational filmstrips were significantly more effective than sound motion pictures, and both were more effective than printed materials.

Filmstrips and sound motion pictures, shown during the time normally set aside for discussion, were as effective in changing attitudes as were printed materials.

Neither filmstrips nor sound motion pictures adversely affected the quantity of students' reading about soil conservation.

Painter, William I. Production and use of classrooms on film versus traditional observations in teacher education. USOE Project Number 127. Akron: The University of Akron, June 30, 1961. (Mimeographed)

Problem: determine the relative effectiveness and practicality of using films and direct classroom observation.

Sample: 347 students at the University of Akron.

Subject taught: educational psychology.

Key variables: film and direct observation; learning.

The experimenters produced nine films of representative classroom activities. Six of these were at the elementary school level, one at the junior high school level, and two at the senior high school level. The activities were unrehearsed. For each of the three semesters of the experiment, two control and two experimental groups were arranged. The control groups directly observed the classrooms and the experimental groups watched the films instead. Two achievement tests were constructed. One had 84 questions with 34 items having r_{bis} values of .30 or above, 35 items having r_{bis} values from .20 to .30, and the remainder having r_{bis} values from .10 to .20. The second test had 76 items which had similar r_{bis} distributions.

For the first experiment there were 46 control students and 44 experimental students. The control group made six direct observations and the experimental students watched two films. Analysis of variance indicated no significant differences in achievement scores between experimental and control groups.

In the second experiment the following semester there were 61 control students and 69 experimental students. The control group made six direct observations and the experimental group watched six films. Analysis of variance indicated that the experimental students had significantly higher achievement scores (.01 level) than control students.

During third semester there were 60 control students and 67 experimental students. The control students made nine direct observations and the experimental group watched nine films. Analysis of variance indicated no significant differences in achievement scores between experimental and control groups. Total differences for the combined three semesters, using different students each semester, tended to favor the film treatment group.

Parsons, T. S. A comparative analysis of some outcomes of instruction by kinescope, correspondence study and classroom procedures. Ann Arbor: School of Education, University of Michigan, 1955. (Duplicated) In Hideya Kumata, An inventory of instructional television research. Ann Arbor: Educational Television and Radio Center, December 1, 1956 (Offset)

Problem: determine the relative effectiveness of kinescope-correspondence study groups without an instructor, conventional classroom discussions with an instructor, and independent correspondence study.

Sample: 20 students in a control group with no instruction, and 20 in the other three groups.

Subject taught: psychology of child development.

Key variables: cohesiveness, attitude, attitude over time, learning, and retention; ITV and face-to-face presentation.

The classroom group met twice a week with the instructor and the kinescope group met about once a week. Students took achievement, sociometric, and attitude tests before, during, after, and four months after the course.

There were no significant differences among the three experimental groups on achievement test scores for any of the three testings. For the retention testing, the correspondence group had significantly higher scores than the classroom group, with the kinescope group in between. Evaluation of written work scores indicated no significant differences for all four testings, although the rankings (from high to low scores) were correspondence, kinescope, and finally classroom groups.

There were no significant differences in mean cohesiveness scores between the kinescope and classroom groups. Total (positive plus negative) choices on the sociometric test increased significantly for the classroom group from pre- to posttest, but tended to decrease for the kinescope group. The difference between the two groups was significant for both the posttest and delayed posttest.

Students preferred the presentation method they were receiving over the other two.

Pasewark, William Robert. The effectiveness of television as a medium of learning typewriting. Unpublished Doctor's dissertation, New York University, New York, 1956.

Problem: determine the effectiveness of learning typewriting by television.

Sample: students in typewriting class.

Subject taught: Beginning Typewriting.

Key variables: typing speed and accuracy and pattern of learning; television and face-to-face presentation.

Typewriting students were divided into two groups matched by ACE scores. One group was taught by television; the other by face-to-face methods. Both groups took 48 fifty-minute typing lessons from the same instructor. At the end of the course, all students took a timed typewriting test. The students in the television group typed significantly faster than the students in the conventional group. On a tabulation and personal business letter exercise at the end of the course, students in the face-to-face group had slightly, but not significantly, fewer errors.

From a series of nine timed typing tests taken during the semester, it was noted that television students were generally superior in speed and accuracy, although the pattern of learning appeared to be about the same in both groups.

Patrick, Robert B. The measurement of the effectiveness of the documentary sound-film as a supplement in the teaching of methods to college students being prepared to teach in the secondary schools. USOE Grant Number 736054. University Park: Pennsylvania State University, 1958. (Offset)

Problem: determine the relative effectiveness of documentary sound films in teacher education.

Sample: 120 students at Pennsylvania State University.

Subject taught: specific techniques.

Key variables: film and face-to-face presentation; learning and evaluation of teaching experiences.

Students were randomly assigned to control or experimental groups. The experimental students did the classroom observing through films; the control group by face-to-face observation. All students took as pre- and posttests an attitude scale of high school teaching, a multiple-choice test of understanding secondary school teaching methods, and an educational psychology test. Test-retest r's were .61, .17, and .54 respectively. Students completed an evaluation of AV and related observations, four essay tests, and a teacher evaluation checklist. Students were also interviewed.

Both film and face-to-face groups made significant gains (.01 level, by t-test) in pretest to posttest scores on the understanding secondary teaching methods test. Students in the experimental group tended to make higher scores on this test than students in the control group. Chi-square analysis indicated that experimental students tended to evaluate their observation experiences higher. Experimental students consistently tended to have higher scores on the essay tests than the face-to-face students.

In two of three experiments run, the experimental students had significantly higher ratings as student teachers (.01 level) than the face-to-face observation students. In the third experiment the same trend existed, although the difference was not significant.

Patrick, Robert B. and Hugh M. Davison. The effectiveness of the documentary sound-film as a supplement in secondary school teacher education -- a follow-up of first year teacher performance. USOE Grant Number 7-48-0720-177. University Park: Pennsylvania State University, September 1, 1963. (Offset)

Problem: determine the lasting effectiveness of face-to-face and film observation methods.

Sample: 194 students at Pennsylvania State University who had had the film or face-to-face observation treatment.

Key variables: film and face-to-face presentation; retention.

Beginning teachers who had observed filmed teaching techniques in general-methods classes were rated significantly higher by their supervisors on techniques which were covered by the films than beginning teachers who had not seen the films. A similar trend, although not a significant one, was observed for beginning teachers who had observed films in teaching special-methods classes.

Beginning teachers who had observed films tended to have more favorable scores on an attitude toward supervision scale. Supervising teachers gave significantly higher grades to beginning teachers who had observed films. There were no significant differences between experimental and control groups of beginning teachers on a manifest anxiety scale.

Peerson, Nell. An experiment with evaluation, in the eradication of adult illiteracy by use of television instruction over a state educational television network supplemented by supervised group viewing and by the related use of project-supplied materials of instruction. USOE Project Number 417. Florence, Alabama: Florence State College, August, 1961. (Mimeographed)

Problem: determine the effectiveness of an ITV program supplemented by group viewing.

Sample: 254 students in eleven relatively illiterate Alabama counties.

Subject taught: adult literacy.

Key variables: television and face-to-face presentation and learning.

Students in the eleven counties saw 98 half-hour kinescopes on television and had teacher help for another half hour three nights a week. Teachers were volunteers, and the typical student was in his forties and desired self-improvement. Four specially constructed instruments were given to all students during the year as well as to grades 2, 3, and 4 in certain Alabama schools. Students also took the Primary II level of the Metropolitan Reading Test and two handwriting scales.

No tests of statistical significance were indicated. The author reports that although the students had lower scores initially than the average second-grader in Alabama schools, by the end of the year the ITV students were somewhat ahead of Alabama second-graders. Students were generally favorable toward the course.

Peterson, Eleanora L. Relationship of income level to the effectiveness of an educational television film. Audio-Visual Communication Review, 6 (1958), 207-212.

Problem: determine the relation between film attitudes and family income level.

Sample: 56 Los Angeles eighth- and ninth-grade girls.

Subject taught: buttonhole making.

Key variables: income level, attitudes.

Two Los Angeles schools were selected as representing the extreme ends of income level. A class of eighth- and ninth-grade girls in each school saw a 13-minute film on making piped buttonholes. Neither teacher had previously demonstrated this to her class. After the film, a questionnaire was read to the pupils; the author read the questionnaire to the high-level group, and the teacher of the low-level class read their questionnaire, and explained meanings of words on the questionnaire to them when necessary.

On all questions about improving the film, the low-level group was more discriminating than the high. The author mentions this difference might be due to a greater interest in sewing because of economic necessity.

Peterson, Jack Arno. The effectiveness of selected motion pictures in changing the beliefs of Nebraska secondary school students relative to the United Nations and its activities, Abstracts of Doctoral Dissertations, The University of Nebraska, Vol. 11. Lincoln: The University of Nebraska, 1950. Pp. 159-164.

Problem: determine attitude changes and information gains about the United Nations from films.

Subjects: 2227 Nebraska secondary school pupils from selected areas in the state.

Subject taught: the United Nations.

Key variables: film and incidental face-to-face presentation, learning and attitudes.

Students in experimental and control schools received both a belief and a factual instrument, as pre- and posttests. Experimental school students viewed the five films in a convocation setting; the control school students received only incidental teaching about the U.N.

Chi square technique comparing the pre- and posttest responses of the experimental group with the pre- and posttest responses of the control group revealed significant differences on half of the items on the belief scale.

The experimental group also made significantly higher scores on the factual instrument than the control students receiving incidental teaching.

The use of films encouraged many students to do additional reading about the U.N.

Students were favorable toward the use of films, but indicated that repeating scenes in different films was distracting.

Pflieger, Elmer F. Detroit TV Teaching Project: Report for the Year 1957-1958. Detroit (Michigan) Public Schools. (Mimeo) 1958. NAEB Research Face Sheet, Series I, 57, NAEB Journal, 18 (March 1959), 1-4.

Problem: comparative effectiveness of larger-than-normal classes using TV teaching and normal size classes using only face-to-face teaching.

Sample: See below.

Subjects taught: Conversational Spanish (Grade 3), Science (Grade 5), Health (Grade 5), Science (Grade 8), World History (Grade 9), American Literature (Grade 11).

Key variables: size of class, learning, face-to-face, instructional TV presentations, listening test, teacher reactions.

Classes were assigned to TV or face-to-face methods of instruction. Classes of both methods followed same outline and were same length. Achievement was measured on standardized tests for content and students in both groups were given listening tests in sequential tests of educational development.

Results. Pupils in the TV classes learned as much subject matter as children in the control (face-to-face) classes. Some significant differences favoring the TV classes were noted. On the listening test TV students scored lower than face-to-face students except for one American literature class and one semester's class in Grade 8 science. Teachers reported that some of the novelty effect of TV was wearing off and some students were losing interest in TV instruction after the first semester. Teachers were also concerned about the lack of teacher-student face-to-face contact during TV instruction. Students in American Literature Grade 11 learned especially well by TV as indicated on subject-matter tests and the listening test. Grade 3 Spanish students learned well from TV, but no comparison has yet been made between TV and face-to-face teaching of Spanish.

Pflieger, Elmer F. The television teaching project report for the year 1959-1960. Detroit: Detroit Public Schools [n.d.]. (Mimeographed)

Problem: determine the relative effectiveness of learning from ITV and face-to-face presentations.

Sample: See below.

Subjects taught: American literature (first and second semesters), junior high science (first and second semesters), world history, elementary science, and health.

Key variables: learning; face-to-face and ITV presentations.

Classes were assigned to face-to-face or ITV treatments. Classes of both treatments followed the same outline, and the length of the class period for both groups was the same. The number of ITV and face-to-face pupils in each course was: American literature (first semester), 273 and 246; (second semester), 214 and 114; science (first semester) 268 and 232, (second semester), 232 and 212; world history, 263 and 352; elementary science, 515 and 299; health, 535 and 314. Students were matched on Detroit Alpha Intelligence and Detroit Tests of Learning Aptitude scores, STEP listening test scores, and sex. American literature students took a specially prepared test before and after the course, science students took a STEP science test before and after the course, world history students took the Cummings World History test before and after the course, and elementary science and health students took tests from the Social and Related Sciences before and after the course. t-tests indicated that the ITV and face-to-face groups were not significantly different initially on any of the matching measures.

t-tests between face-to-face and ITV pupils' final subject-matter scores for each of the seven courses indicated one significant difference (.05 level) favoring the ITV students (American literature first semester) and one significant different (.05 level) favoring the face-to-face students (elementary science).

Pflieger, Elmer and Fred C. Kelly. The National Program in the Use of Television in the Public Schools. New York: The Ford Foundation and the Fund for Advancement of Education, 1961. Audio-Visual Communication Review, 10 (1962), 128. (Abstract)

Problem: compare the achievement of students in large classes viewing television with students in face-to-face classes.

Sample: 200,000 students in 800 schools.

Key variables: television in large classes and face-to-face presentation; learning.

In the third year of the study, students in TV classes learned as much as students in face-to-face classes. TV students did significantly better in 48 comparisons, and face-to-face students did significantly better in 24 comparisons. Over the three years, 119 comparisons were significant in favor of TV students, and 44 favored the face-to-face students.

Phillips, John Anderson. A study designed to determine the spelling learning which may be attributed to a specific series of spelling lessons presented by television. Unpublished Doctor's Dissertation, Washington University, St. Louis, 1959.

Problem: determine the relative effectiveness of learning by a televised "Learn to Spell" series, a method similar to "Learn to Spell" only without the use of television, and by conventional methods.

Sample: 18 fourth-grade classes.

Subject taught: spelling.

Key variables: "Learn to Spell" television series, "Learn to Spell" face-to-face techniques, conventional spelling teaching; learning.

Six fourth-grade classes were each assigned to one of the three treatments. All students took three achievement tests.

Analysis of variance and t-tests indicated there were no significant differences in spelling achievement among any of the three groups.

Pitkin, Vernon. An Adventure in ETV: "Asia in ferment". Connecticut State
Department of Education, Division of Instruction. 1957. (Mimeographed)
NAEB Research Fact Sheet, Series I, 54, NAEB Journal, 17 (November 1958),
1-4. (Abstract)

Problem: comparative effectiveness of television and face-to-face teaching.

Sample: 17 Connecticut schools.

Subject taught: Asia.

Key variables: TV teaching, face-to-face teaching, classroom teacher motivation, student attitude.

Students in 16 schools were taught by open-circuit television. Students in one other school were taught face-to-face as a control group. Comparing performance on tests, the author concludes (1) all students of all ability levels made significant gains from instruction. (2) Students taught by TV where the classroom supervising teacher gave heavy emphasis to the TV lesson made significantly better gains than students in classrooms where supervising teacher gave program little emphasis. (3) TV instruction produced widely differing effects on attitudes toward Asia. Some students gained sympathy for Asia while others lost sympathy. (4) Students felt 36 program series was too long. (5) Guest authorities brought to the program were the series' highlight. (6) TV presentation motivated many classroom teachers to begin a face-to-face presentation on Asia.

Pollock, Thomas Clark, *et al*. New York University. *Closed-Circuit Television as a Medium of Instruction 1955-56*. New York: New York University, October, 1956.

Problem: determine the relative effectiveness of ITV and face-to-face presentation on learning and determine students' attitudes.

Sample: See below.

Subjects taught: composition and English literature.

Key variables: learning, attitudes, and attitudes over time; face-to-face and ITV presentation.

The first semester 86 students took English Literature; the second semester 90 students took it. The first semester 251 students took composition and 222 students took it the second semester. For both courses, ITV classes took two hours a week and a discussion took a third.

In the fall, 31 per cent and 45 per cent of the composition and literature students were undecided or unfavorable toward ITV, and 69 per cent and 55 per cent were favorable. Composition students did not change their attitudes over time, but literature students tended to become more favorable. Students in both classes tended to rate the ITV course as less effective than face-to-face courses.

Generally there were no significant differences in the final grades of ITV and face-to-face students, except that in the second semester, face-to-face students tended to achieve higher grades than ITV students.

Popham, W. James and Joseph M. Sadnavitch. The effectiveness of filmed science courses in public secondary schools. USOE [Project Number not given.] Pittsburg, Kansas: Department of Education and Psychology, Kansas State College of Pittsburg, August, 1960. (Offset)

Problem: determine the relative effectiveness of filmed physics and chemistry courses.

Sample: 312 physics students and 475 chemistry students in twelve southeast Kansas secondary schools.

Subjects taught: physics and chemistry.

Key variables: film and face-to-face presentation; learning, ability, attitude, and attitude over time.

One hundred and fifty-five physics students saw 149 30-minute Encyclopaedia Britannica physics films, and 157 received physics by face-to-face presentation. Two hundred and thirty-four chemistry students saw 132 30-minute Encyclopaedia Britannica chemistry films and 241 received chemistry by face-to-face presentation. Students took the Cooperative Physics Test (or Cooperative Chemistry Test), Thurstone Interest Schedule, and Purdue's Scale for Measuring Attitudes Toward Any School Subject. Otis Quick-Scoring MA scores were available. Students also took a 30-item Likert film attitudes questionnaire, and teachers completed a Teacher Reaction Survey.

Analysis of covariance indicated that posttest scores of face-to-face physics students were significantly higher than posttest scores of film physics students. There were no significant differences between the posttest achievement scores of the two chemistry groups. There was no significant interaction of presentation method by ability level for either the physics or chemistry students. Mann-Whitney U tests indicated no significant differences between the two physics groups in their interest in physical science, although the attitude of experimental students tended to be lower than control students. The lower ability chemistry film group had significantly less interest in physical science than the lower ability chemistry face-to-face group. Both chemistry and physics face-to-face and film groups had a more unfavorable attitude at the end of the course than at the beginning, but the film groups' attitudes were significantly more unfavorable than those of the non-film groups.

Purdue University closed circuit television instruction. Station WBAA, Lafayette: Purdue University, 1956. Audio-Visual Communication Review, 6 (1958), 77-78. (Abstract)

Problem: determine students' and teachers' attitudes and determine the effectiveness of ITV.

Sample: classes having from 26 to 51 students.

Subjects taught: analytic geometry, government, and general bacteriology.

Key variables: learning and attitudes; ITV students and students in similar classes the previous year.

Students in analytic geometry were not enthusiastic and the talkback system was not satisfactory. Test scores of ITV students did not differ from students in the previous year's class.

Students in government complained of lack of talkback, lack of clarity of visuals, difficulty of taking notes in a dark classroom, not having the instructor in the room, having difficulty seeing around other students, and the instructor's restricted movement. Students appreciated the teacher's preparation, the visuals, and the ability of television to direct attention. There were no differences in learning.

Students in bacteriology felt they learned more, felt the course was more interesting, that television permitted closer viewing, had a greater variety of demonstrations, and that television enabled them to pay attention and learn more easily. They disliked sitting on a lab stool, the glare from the glassware, the small screen, and other technical difficulties. There was little difference in test scores.

Radlow, Robert. The relation of some measures of ability to measures of learning from sound motion pictures (SDC 269-7-58). Instructional Film Research Reports. Port Washington, New York: U. S. Naval Special Devices Center, 1955.

Also, Some Factor-pure Abilities and Their Relation to Learning from Sound Motion Picture Films. Unpublished master's thesis. Pennsylvania State University, 1953.

Problem: effect of certain mental abilities on learning from films.

Sample: one company of recruits at Indiantown Gap Military Reservation.

Subjects taught: measuring instruments, meterology.

Key variables: learning from films, scores on five facets on Guilford-Zimmerman Aptitude Survey.

One company of Army recruits was given a selected version of the Guilford-Zimmerman Aptitude Survey to measure the following aptitude factors: (1) verbal comprehension, (2) general reasoning, (3) perceptual speed, (4) spatial orientation, and (5) spatial visualization. An information pretest was given to all the recruits. The films were shown to half of the group. The same information test was given as a delayed post-test one week later to measure information learned.

Intercorrelations of the information learned and the five factors were calculated for both groups. Through factor analysis difference between the film and non-film groups were identified.

Conclusion. Verbal comprehension, general reasoning, and spatial orientation factors serve as the best predictor of learning from these films.

Reede, Arthur H. and Roland K. Reede. Televising Instruction in Elementary Economics. Industrial Research Bulletin No. 5. University Park: The College of Business Administration, Pennsylvania State University, 1963.

Problem: determine the relative effectiveness of ITV and large-screen ITV on the same and on different campuses, and determine students' attitudes.

Sample: See below.

Subject taught: elementary economics.

Key variables: attitudes, attitudes over time, achievement; small- and large-screen TV.

214 students on three campuses took an achievement test having an objective portion (correlation between two halves = .76) and a problem-solving portion (correlation between two halves = .70). Split-half reliability coefficients (corrected by Spearman-Brown) for the second and final examinations were .85 and .86 for the objective portion and .83 and .84 for the problem-solving portion. 134 students saw the course on 24" monitors and 80 saw the course via an Eidophor projector. Analysis of variance run on scores of students in the various groups indicated a non-significant F ratio. Analysis of variance also indicated no significant differences in over-all achievement scores between the Eidophor students and large lecture face-to-face students who had taken the course the year before.

A chi-square (with Yates' correction) run on scores of students in the Eidophor treatment on the problem-solving portion of the three instruments indicated that Eidophor students' scores were significantly lower than problem-solving scores of students on the same or other campuses who saw the course on 24" monitors. There were no significant differences among groups on scores on the objective portions of the instruments.

137 students were given an attitude questionnaire. About 2 per cent thought that the talkback system was "frustrating", and 17 per cent thought it "mildly disturbing". On the other hand, 12 per cent thought it was frustrating not to have the instructor in person, and 17 per cent thought it was mildly disturbing. Attitudes of students over time (after 5, 10, and 15 weeks) showed increasing favorability toward ITV.

Spearman's rho for problem scores and number of absences was -1.00, and for problem scores and number of outside of class consultations with the teacher was .99.

(Students' acceptance of the Eidophor treatment reported in this study is in the abstract of the study by Greenhill, Rich, and Carpenter.)

Reid, J. Christopher. An experimental study of a comparison of content learned, attitude toward subject matter, and attitude toward instructional television of students in a public speaking course presented by television and face-to-face methods. Columbia: Instructional Television, University of Missouri, 1960. (Typewritten)

Problem: determine the relative effectiveness of face-to-face and ITV presentation, and determine students' attitudes toward public speaking, and ITV.

Sample: 122 students in section I and 143 students in section II.

Subject taught: public speaking.

Key variables: ability, learning, attitudes, and attitudes over time; face-to-face and ITV presentation.

Each week, students in section I received one 50-minute ITV lecture and had two 50-minute face-to-face classes taught by a graduate student. Students in section II received one 50-minute face-to-face lecture by the same professor and also had two discussion classes. In the middle of the semester, the sections exchanged treatments. Both sections took a subject matter test, an 11-item attitude toward ITV test, and a 5-item attitude toward public speaking test before, in the middle, and at the end of the semester. _t_-tests indicated no significant differences between sections I and II on pre-subject matter test scores or on OSPE percentile ranks, but section II had a significantly higher GPA than section I.

There were no significant relationships between students' scores on either of the attitude instruments and scores on the subject matter test for any of the three testings. Scores on the final subject matter test correlated .40 and .54 with OSPE percentile ranks, .41 and .59 with GPA, and .37 and .33 with final grades in the course.

There were no significant differences between the two sections in mean scores on either the mid-semester or the final subject matter test, and there were no significant differences between the two sections on final grades.

Section I students were significantly more favorable toward ITV at the beginning of the course than section II students, and remained so throughout the course. Mean attitude scores of section I students increased at mid-semester and declined slightly at the end of the year. Scores of section II students did not change from pretest to mid-semester, but tended to become more favorable from mid-semester to the end of the course.

There were no significant correlations between mean scores of attitude toward ITV and attitude toward public speaking. $\underline{t}$-tests indicated no significant differences between the two sections on attitude toward public speaking scores for any of the testings.

With students divided into sections taught by different graduate students, analysis of variance run on the final attitude toward speech scores resulted in a significant $\underline{F}$ ratio (.01 level).

Reiner, William B. The effectiveness of a TV series in improving kindergarten to Grade 2 science teaching programs. School Science and Mathematics, 40 (1956), 397-408.

Problem: effectiveness of utilizing educational TV series in primary school classrooms.

Sample: 388 teachers.

Subject taught: elementary grade sciences.

Key variables: teacher opinions.

After each of eight weekly ETV programs, The Science Corner, a questionnaire was sent to teachers utilizing the program to determine the teacher's expression of the effectiveness of the programs as an enrichment device for classroom teaching.

Results. From the questionnaires the author concludes (1) the teachers expressed a favorable opinion of the program series. Ninety-four per cent of the teachers rated the series as excellent or good on criterion appropriateness of program to subject matter for grade level. (2) Ninety-two per cent rated the program series excellent or good on the criterion of appropriateness to vocabulary at grade level. (3) Eighty-four per cent rated program excellent or good on criterion of rapport of TV teacher with students. (4) Teachers also rated the program highly on criteria of pace, effectiveness of demonstrations, usefulness of program in teaching program, and pupil interest after telecast.

Rock, Robert T., J. S. Duva and J. E. Murray. The effectiveness of televised instruction in training Naval Air Reservists (SDC-476-02-S2). Instructional TV Research Reports. Port Washington, Long Island, New York: U. S. Naval Special Devices Center, April, 1951.

Problem: determine relative effectiveness and acceptance of live TV, recorded TV and face-to-face instruction for geographically widely separated groups.

Sample: 360 Naval Air Reservists.

Subjects taught: refresher course for officer pilots, basic course for enlisted men.

Key variables: TV, recorded TV (film), and face-to-face instruction.

Naval Air Reservists at nine naval air reserve stations were used in the experiment, grouped as follows:

1. Three stations taught by live TV
2. Three stations taught by kinescope recordings of the TV lessons shown as films
3. Three stations taught same lesson material by local instructor.

Approximately 40 men at each station received instruction by one method, making approximately 120 men being taught under a given method of instruction. Two lesson series of eight lessons each were given, one a refresher course for officers, the other a basic course for enlisted men. Pretests and posttests were given each man. All men were told they were in an experiment in teaching methods. Pretest contained 30 multiple-choice items and the posttest contained the same 30 items plus 30 additional items. Written comments were invited at the end of each lesson. The live TV group had a feedback microphone so they could question the instructor during the lesson. The recorded TV group saw the recording as a motion picture film. The local instructor group heard a lesson planned from the TV lessons, but not a verbatim transcript. Comments were invited during the experiment from the research staff and the naval officer advisory group.

Based on the examinations, the following percentage of comparisons indicating the specified conditions were found:

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Method of Instruction and Comparison	Officers' Course	Enlisted Men's Course
TV superior to face-to-face	50%	53%
TV equivalent to face-to-face	38	20
TV inferior to face-to-face	13	27
Kinescope superior to face-to-face	38	47
Kinescope equivalent to face-to-face	44	27
Kinescope inferior to face-to-face	19	27
TV superior to kinescope	6	27
TV equivalent to kinescope	94	73
TV inferior to kinescope	0	0

The above comparison comes from the differences between the mean adjusted scores on pretest and posttest for the three groups. Adjustment for individual inequalities on pretest scores was made by analysis of covariance. Differences were significant if they met or exceeded the .05 level of confidence.

Comments by the subjects tended to be favorable toward TV as a means of instruction. The project staff felt the talkback microphone was inadequate because a great deal of trivial questions were asked by the students. They also expressed a need for better visualization and production techniques.

With regard to production design the authors conclude that:

1. Direct narration by the TV instructor is an effective means of teaching. In analyzing the content of the programs where the instructor talked directly to students without dramatization, TV tended to be superior to face-to-face instruction.
2. Animated film sequences were effective.
3. A combination of dramatic action and narration was ineffective.

The authors conclude TV is an effective and acceptable means of instruction for geographically widely separated groups.

Rock, Robert T., James S. Duva, and John Murray. A Study of Learning and Retention from Television Instruction Transmitted to Army Field Force Reservists (SDC-476-02-S3). Instructional TV Research Reports. Port Washington, New York: U. S. Naval Training Devices Center, 1951.

Problem: instruction of geographically separated groups of officers and enlisted men.

Sample: 3,000 Army reservists.

Subject taught: Army operations during encounter with enemy troops.

Key variables: learning gains from pretest to posttest, learning gains from posttest to delayed retest, attitudes toward instructional television.

Three thousand Army reservists were given a series of eight one-hour televised lessons over part of a commercial TV network in eastern and north central cities. Reservists assembled in groups of 160 to view the lessons transmitted from New York City. Lessons were prepared by Army Command and General Staff College. Multiple-choice tests were constructed by the authors to be used as pretest, immediate posttest, and delayed (1-6 weeks) retest. Scores were evaluated by difference in number of items completed from pretest to posttest and retest, and difference in per cent of items correctly completed.

Subjects ranged in rank from private to colonel with almost all Army branches represented. Each of the programs was presented as a dramatization by professional actors. A section of each test was devoted to a reaction survey and a rating scale for reaction to total series was included in the final testing session.

All grades of officers and enlisted men made higher scores on posttests than pretests. When analyzed by rank, all groups made higher scores after instruction. Officers retained 85 per cent and enlisted men retained 65 per cent of newly learned material over a period of six weeks.

Four-fifths of the total sample reported the lessons as interesting or very interesting. A majority of the group thought the lessons excellent or good. About 75 per cent thought they would rather be taught by TV than by any other method. Officers tended to favor TV as a means of instruction more than enlisted men.

In viewing kinescopes and classifying concepts taught as "explicit", "sketchy", or "not covered", the authors concluded that information gain is related to the explicitness with which a concept is taught. Items explicitly covered showed the highest information gain and longest retention. The authors also reported that subjects taught by direct narration seemed to learn and retain better than subjects taught by dramatization alone.

Rogers, William R. Television utilization in the observation program for teacher education. USOE Grant Number 704001. San Jose: San Jose State College, 1959-1962. (Offset)

Problem: determine the relative effectiveness of varying amounts of television and face-to-face observation.

Sample: 500 students. (Four replications)

Subject taught: elementary school curriculum and observation.

Key variables: amount of observation, television and face-to-face observation.

Students were divided into five groups. One group had television observation plus twelve hours of face-to-face observation, another group had television plus 25 hours of face-to-face observation, a third group had television plus 37 hours of face-to-face observation, and the two remaining (control) groups had no television and 50 hours each of face-to-face observation.

College scholarship, age, sex, college qualification test scores, and a faculty rating sheet data were available for all students. Students were also rated on relationships with children, with staff, teaching techniques, and on personal qualifications.

Analysis of variance technique indicated no significant differences among scores of students in the five groups for college qualification test scores, grade-point average, or scores on the faculty rating sheet. Analysis of covariance controlling for grade average indicated no significant differences among groups on the four rating scales.

Romano, Louis. The role of sixteen millimeter motion pictures and projected still pictures in science unit vocabulary learnings at grades five, six, and seven. Unpublished Doctor's dissertation, University of Wisconsin, Madison, 1955.

Problem: determine the effectiveness of films and slides in learning.

Sample: fifth, sixth and seventh graders in Shorewood and Whitefish Bay, Wisconsin.

Subject taught: science.

Key variables: film and slide presentation, immediate and delayed learning of vocabulary, attitudes.

Control and experimental pupils had several visual aids, but only experimental pupils had films and slides. Treatments were rotated so that each group was an experimental and a control group. Fifty-item vocabulary tests were given as pretests, posttests and delayed (six months) posttests for each of the six study units.

Gain scores of experimental groups were greater than control groups in all units. There was some tendency for experimental groups to make higher scores on the delayed posttest than the control groups. There seemed to be little relationship between measures of ability and vocabulary test scores.

Pupils were favorable to the use of films and slides.

Rosenstein, Alvin J. and Joseph H. Kanner. Television in army training: Color vs. black and white. Audio-Visual Communication Review, 9 (1961), 44-49.

Problem: determine learning from color and black and white television.

Sample: 116 EM, officers and civilians at the Ordinance Guided Missile School, Huntsville, Alabama.

Subject taught: guidance and repair of Nike missile system.

Key variables: color and black and white presentation; learning; ability.

Enlisted men, officers, and civilians were matched on the Army Mechanical Aptitude or AGCT test, and were assigned to color or black and white treatments. Both groups saw the same fifteen lessons and took objective multiple-choice tests immediately after each lesson.

There were no significant differences between mean scores for any of the fifteen lessons between the two groups. When Ss were divided into high- and low-ability groups there were no definite trends that either black and white or color was more effective.

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Rosselot, LaVelle. Evaluation of the Otterbein College film-text method of teaching French, at five Ohio institutions. USOE [Project Number not given] [No place,] September 30, 1961. (Mimeographed)

Problem: determine the relative effectiveness of using textbooks or films and textbooks in teaching French.

Sample: about 150 students from two colleges, Oberlin and Wooster; one senior high school, and one junior high school.

Subject taught: French.

Key variables: listening and learning; film and text and text teaching methods.

Students took the OSPE, two ETS French tests, and an oral (taped) test.

For the college students, _t_-tests indicated no significant differences between experimental (film and texts) and control (texts) groups on OSPE scores, but students in the control group had significantly higher (.05 level) scores on the two ETS French tests. Experimental students had significantly higher scores on the oral (taped) test. These results were duplicated the second year of the experiment, except that there were no significant differences between groups on the ETS Cooperative French listening test (there students in the experimental group tended to have higher scores). Thus on the two listening instruments, students in the film and texts group achieved higher scores; on the reading instruments, the text groups achieved higher scores.

Similar trends (though often non-significant) were observed for the high school students the first year, but on the second year, high school students in the experimental group achieved significantly higher scores (.05 level) on nearly every instrument.

Rothchild, Thomas H. and R. LeRoy Lastinger. The Florida West Coast Project for the Utilization of Television in Large Class Teaching: First Year Report, July 1959 to June 1960. NAEB Research Fact Sheet, Series I, 90, NAEB Journal, 20 (January 1961), 1-2 (Abstract)

Problem: comparative effectiveness of TV and face-to-face teaching.

Sample: 6,689 students in elementary and secondary schools.

Subjects taught: social studies, mathematics, United States history, biology, American problems.

Key variables: TV teaching, face-to-face teaching.

In six elementary schools each child spent 90 minutes in a large class with time divided equally between watching two TV lessons and working under supervision of classroom teacher. Then large group was divided into two-three sections for 2-45 minute periods of work in physical education, art, music, and science. For the rest of the day each class was assigned to a skills classroom for face-to-face instruction in language arts, arithmetic, and reading. [No report of secondary school program.]

Results. (1) Students learn as effectively in large classes taught by TV as in large classes taught face-to-face. (2) Students accept TV large classes and say they work as hard or harder.

[Report also includes description of teacher utilization under Stoddard plan organization.]

Rottman, Leon Harry. The effectiveness of high school television-correspondence instruction. Unpublished Doctor's Dissertation, University of Nebraska, Lincoln, 1960.

Problem: determine the relative effectiveness of television-correspondence and face-to-face presentations.

Sample: high school students.

Subjects taught: algebra, geometry, chemistry, English, physics, general mathematics, art, and Spanish.

Key variables: television-correspondence and face-to-face presentation; achievement, attitude, and ability level.

Students in all courses took standardized achievement tests and an attitude questionnaire on subject, presentation method, and teacher.

Analysis of covariance indicated no significant differences between presentation methods on students in general mathematics, physics, and art. There were no significant differences among geometry students at mid-year, but posttest scores of geometry students in small control classes were significantly higher than other groups. Algebra students in the experimental group had significantly higher mid-year scores than other algebra students. Spanish and chemistry students in the large school control group had significantly higher scores at mid-year and on the posttest. English students in the experimental group had significantly higher scores than students in the large and small school control groups on the posttest, but at the below-average ability level the small school control group had higher scores.

In the subject matter evaluation, the control group students had a significantly higher rating than experimental students in all courses except English. In the presentation method evaluation, the control group students had a significantly higher rating in all courses.

Rumford, Herbert Paul. An experiment in teaching elementary school methods via closed-circuit television. Unpublished Doctor's dissertation, University of Colorado, Boulder, 1960.

Problem: determine the relative effectiveness of student achievement and to determine student attitude, with face-to-face and television presentations.

Sample: 30 students at a Kansas state teachers college.

Subject taught: elementary school methods.

Key variables: television and face-to-face presentation; MTAI, and MMPI scores, retention, and learning.

Thirty students were matched by age, sex, methods course experience, teaching experience, and raw scores on the Henmon-Nelson Test of Mental Ability and the MTAI. Students were then divided into two groups. Face-to-face students watched the lectures and classroom observations directly; television students received both the television lectures and classroom observations via closed-circuit television. The effectiveness of television for classroom observations was measured by scores on objective examinations and by scores on daily observation papers. The effectiveness of television in lecture content was measured by multiple-choice, teacher-made tests. Both groups also took the MTAI and two scales from the MMPI: the teacher prognosis scale and the Welsch A scale as pretests and posttests.

Televised lectures were as effective as face-to-face presentation in subject matter, when measured by teacher-made objective test scores. Observation by television was as effective as direct observation, when measured by teacher-made objective test scores, but was significantly less effective when high-ability students were measured separately. When scores on the daily observation sheets were used as a criterion, televised observation was significantly more effective than was direct observation. This was true of all ability levels. No significant differences in effectiveness for either television or face-to-face lecture or observation were found using final grades as a criterion, and no significant differences were found between television and face-to-face lectures from scores on an examination given four months after the semester ended.

Scores from the MTAI revealed no significant differences in teacher attitude, and scores on the selected MMPI scales revealed television students improved significantly in teacher prognosis, while face-to-face students did not. This difference was limited to the low-ability group when the groups were considered separately. Students in the television group did not show greater anxiety, as determined by the MMPI scale.

It was concluded that television was as effective as face-to-face methods in learning and attitude change in the elementary school methods course.

Sadnavitch, Joseph M. and W. James Popham. Retention value of filmed science courses. USOE Project Number 615. Pittsburg, Kansas: Kansas State College of Pittsburg, August, 1961. (Mimeographed)

Problem: determine the relative retention of students in filmed and face-to-face science courses.

Sample: 215 chemistry and 86 physics students in 12 high schools.

Subjects taught: high school physics and chemistry.

Key variables: film and face-to-face presentation; learning and retention.

The year previous to this study, 247 physics students and 486 chemistry students from 12 southeast Kansas schools took year-long courses in physics and chemistry either by face-to-face or by daily 30-minute filmed (Encyclopaedia Britannica) presentations. The sample of students for this present study was drawn from those who had participated in the previous science films study, and included 368 students (now seniors) of the original 733 from 12 schools. 153 of the 215 chemistry students had been taught by film, and 63 of the 86 physics students had been taught by film.

Students took the Cooperative Physics Test or the Cooperative Chemistry Test, as well as the Otis Quick-Scoring MA Test. Students' grade-point averages and end-of-course achievement test scores from the previous year were also available.

At the end of the first semester of the year after students had taken the course (a 7-month interval), students took one form of the Physics (or Chemistry) test; at the end of the second semester they took another form of the test. Students were not notified beforehand of the testing operation.

Pearson correlations among the 7-month retention chemistry test scores, the end-of-course achievement test scores, Otis MA scores, and GPA ranged from .41 to .72. A similar range was found for correlations among the 12-month retention test and the other measures. Pearson correlations among the 7-month Physics test scores, end-of-course achievement test scores, MA score, and GPA ranged from .26 to .71. Correlations among the 12-month Physics test and the other measures ranged from .33 to .68.

Analyses of covariance (controlling on Otis MA scores, grade-point averages, and end-of-course achievement test scores for the previous year) were run for both the first and second semester testings.

There were no significant differences in scores on the retention instruments between students in face-to-face and film classes for either chemistry or physics. This finding was true for both the 7-month and 12-month retention intervals, except that scores of chemistry students in face-to-face classes were significantly higher (.05 level) than those of students in film classes on the 7-month retention interval.

Sargent, Leslie W. A comparison of the short-term effects of certain types of television program materials. USOE Grant Number 704084. Angwin: Pacific Union College, 1962. (Offset)

Problem: To determine the influence of kinescopes and films on capacity for mental work, the influence of suspense material, and reactions of students of different ages.

Sample: 230 eighth- and tenth-grade students from ten classrooms in four California towns.

Subject taught: Colonial Williamsburg (44-minute color film), and two Westerns (28-minute kinescopes).

Key variables: Audio-visual materials (films) vs. conventional class as pre-conditioning for mental work (DAT test).

Students in each class were matched for sex and ability scores. Experimental students viewed one of the films, and then took a DAT subtest; control students had a regular class, and then took the same subtest. The following day the treatments were reversed. Over 50 per cent of the students in the classroom tended to make higher scores on the subtests when taken after a regular class, and less than 50 per cent of the students tended to make higher scores on the subtests when taken after the films or kinescopes. This trend was observed for the abstract reasoning test, for the numerical ability test, and for the verbal reasoning test; for the educational and Western film, for high- and for low-ability students, for eighth-grade students and for males. For tenth-grade students and for females the percentage was significantly different (.05 level, Wilcoxon sign rank test) in favor of students taking the tests after the film.

For students in a class taught by a woman, male students tended to achieve higher subtest scores after the film and female students higher scores after the class. For students in a class taught by a man, both male and female students tended to achieve higher scores after the class.

Conclusion: Film-related variations in the capacity of students to do mental work were found to be smaller than variations associated with normal teacher-to-teacher differences in the standard classroom.

Scheller, Fred, Jr. A comparative study of the differences in student attitudes toward history and chemistry television courses. Unpublished Doctor's dissertation, University of Oregon, Eugene, 1959.

Problem: determine if there are differences in students' attitudes between history and chemistry courses.

Sample: 80 students from three state schools in Oregon.

Subjects taught: General Chemistry and History of the United States.

Key variables: students' attitudes; course.

All subjects were given a schedule of 43 questions by one interviewer.

Both chemistry and history students thought science courses were more desirable than other types of courses on television. Using visual aids and "nearness" of material appeared to influence students' attitudes positively. Students from all colleges wanted to see ITV courses offered more regularly. Students' attitudes toward ITV seemed to be lower on campuses where professors served as discussion leaders than where graduate students served as discussion leaders.

Chemistry students were not concerned about not being able to ask questions since they could do this during a recitation period. Chemistry students were generally more favorable toward their own ITV course, and toward ITV courses generally than were history students. History students were more concerned about lack of personal contact with the teacher. There may have been some local (college) differences to account for some of the differences between students' attitudes.

Schlaak, Franklin Ottmer. The planning, production and evaluation of two experimental series of classroom telecasts for use in the intermediate grades in the Columbus, Ohio, area. Unpublished Doctor's dissertation, Ohio State University, Columbus, 1955.

Problem: determine the interests of pupils and teachers.

Sample: teachers and pupils in the Columbus area.

Subjects taught: science and art, attitudes.

Summary: All 22 telecasts were evaluated by questionnaires, discussions with teachers, and pupil reactions noted by teachers.

Pupils and teachers tended to be more favorable to science and art after the series was presented.

Schueler, Herbert, Milton J. Gold, and Harold E. Mitzel. The use of television for improving teacher training and for improving measures of student-teaching performance. Phase I. Improvement of student teaching. USOE Grant Number 730035. New York: Hunter College of the City University of New York, 1962. (Mimeographed)

Problem: determine the relative effectiveness of kinescopes, kinescopes and personal visitation, and visitation only.

Sample: 24 student teachers the first semester, 12 the second, and 18 the third.

Subject taught: student teaching.

Key variables: kinescope, kinescope and observation, observation.

Supervisors made personal visits, or directed the making of kinescopes of the student teachers' performances, or directed the making of kinescopes and then conferred with the student teacher. Student teachers were randomly assigned to one of these three treatments. Student teachers' performances were recorded by judging behavior on certain characteristics that were shown to have a stability coefficient of .40 or greater, and they were also interviewed.

There were no significant differences among scores on a behavioral instrument used to record performance of the student teachers in the three treatments. The authors noted a wide range of behavior characteristics of student teachers undergoing training, the effects of supervisors and classroom environment, and changes in the students' attitudes toward the teacher's role.

Supervisors preferred the kinescope and observation treatment to the other two treatments. The behavioral performance record was found to have some validity. The use of kinescopes as an instrument in educational research showed considerable promise.

Schwarzwalder, John C. An investigation of the relative effectiveness of certain specific TV techniques on learning. USOE Project Number 985. St. Paul, Minnesota: KTCA-TV, September, 1960. (Offset)

Problem: determine the effect of visual continuity, reinforcement, and visual manipulation on learning.

Sample: 40 fifth-grade classes in St. Paul public schools.

Subject taught: fifth-grade science.

Key variables: visual continuity (planned and unplanned), visual reinforcement (supering or no supering), and visual manipulation (as in a lecture situation or as in a television situation).

Pupils from the 40 classes saw 72 kinescopes. They also took the Otis Quick-Scoring MA Test, and eight objective content tests. Item difficulty and discrimination analysis were performed on the latter. Hoyt's r on the eight science tests varied from .58 to .82.

Analysis of covariance technique indicated that pupils generally did significantly better (.05 level) on the science content test when they viewed a kinescope that had planned continuity, visual reinforcement, and had been the result of a team approach to make effective use of the medium.

Scollon, Robert W., Jr. Relative effectiveness of several film variables in modifying attitudes: a study of the application of films for influencing the acceptability of foods. (SDC-269-7-60). Instructional Film Research Reports. Port Washington, New York: U. S. Naval Special Devices Center, 1956.

Also: A Study of Some Communicator Variables Related to Attitude Restricting through Motion Picture Films. Unpublished doctoral dissertation. Pennsylvania State University, 1956.

Problem: effect of different prestige roles for film communicators in changing attitudes.

Sample: 311 Army quartermaster trainees.

Subject taught: utilization and acceptance of individual combat ration (C ration).

Key variables: prestige of communicator, level of identification of communicator, relationship of communicator to audience reference group.

Five versions of a film on the development and use of the C ration were produced. Common to all the films was a series of visual sequences on the contents, and development of the C ration. The variations were:

I. Basic film + anonymous narrator
II. Basic film + scientist narrator
III. Basic film + veteran narrator
IV. Basic film + anonymous narrator with interview with scientist added
V. Basic film with anonymous narrator with interviews with veterans added.

Attitude was inventoried on specially constructed food survey questionnaire which measured acceptance of C rations. (Test-retest reliability correlation .85)

Seven groups of 60 subjects each were drawn from Quartermaster Corps school at Fort Lee, Virginia. Five groups were each shown a different version of the film. The first two groups were given a questionnaire as a pretest to serve as a control group.

2--Scollon, Robert W., Jr.

Results. (1) No significant difference in attitude change when a prestigeful narrator was used instead of an anonymous narrator, (2) identification of a narrator with the film had little effect on attitude change, (3) pretesting the film groups on attitude about subject before they saw the film reduced the effectiveness of the film to change attitudes, (4) some changes in attitude for the groups which saw the film were significantly different in favor of the C ration from pretest or control group attitudes, but this was not a consistent change, (5) the relationship of the communicator to the audience significantly changed attitudes.

Conclusions. There appears to be some effect of attitudes when the narrator is identified with the film, but the most significant effect occurs when the narrator identifies with the audience reference group.

Scott, Donald Thomas. An analysis of teacher and student opinions of an experimental method of teaching high school physics through the use of films as compared to traditional methods. Unpublished Doctor's Dissertation, University of Wisconsin, Madison, 1959.

Problem: determine teachers' and students' attitudes toward using physics films.

Sample: 30 teachers and students in 60 schools.

Subject taught: 81 30-minute Harvey White physics films.

Key variables: students' and teachers' attitudes; face-to-face and film presentation.

Teachers and students filled out free-response and checklist interest inventories.

Teachers and students were favorable toward the films as lab demonstrations, but felt that the films presented new material at too rapid a pace. Students in the experimental group had less favorable attitudes than those in the control group. Students in the experimental group reported they spent less time studying the textbook and doing assignments, and paid greater attention in class. Teachers felt they learned new techniques, but increasingly disapproved of giving time to "another teacher." Generally, two-thirds of the teachers had negative opinions and one-third had favorable attitudes, as measured by an attitude instrument.

Scott, Donald T. Teaching high school physics through the use of films. *Audio-Visual Communication Review*, 8 (1960), 220-221.

Problem: determine teacher and student attitudes toward teaching physics by films.

Sample: 1298 Wisconsin high school students.

Subject taught: films from the Harvey White "Introductory Physics" series.

Key variables: film and face-to-face presentation; attitudes.

Students saw 81 of the 162 Harvey White physics films. Students and teachers took open-ended and "check type" questionnaires.

Students and teachers felt that some of the films could be shortened, but thought that many of the filmed demonstrations were valuable. Most felt the films went at too fast a pace. Students did not like learning physics from films as well as face-to-face methods, although students in the film series used the textbook less and paid greater attention in class. Teachers disliked having "another teacher." Teachers' attitudes on the whole were generally negative.

Seibert, W. F. A brief report and evaluation of closed-circuit television in Mechanical Engineering 360. Audio Visual Center, Lafayette: Purdue University. Audio-Visual Communication Review, 6 (1958), 77. (Abstract)

Problem: determine the relative effectiveness of face-to-face and ITV presentations.

Sample: a group of 46 students in ITV classes and other students in face-to-face classes.

Subject taught: mechanical engineering.

Key variables: learning and attitudes; ITV and face-to-face presentations.

Students in both groups took a 28-item achievement test and a 10-item questionnaire.

Achievement was about the same between the two groups.

Students' attitudes were somewhat unfavorable. Favorable responses included the value of TV demonstrations, comfort in TV classes, classroom discipline, and a general acceptance of TV for instruction. Unfavorable responses included inability to ask questions (although a talk-back system was available), lack of opportunity to take notes in class, and lack of opportunity to know the teacher.

Seibert, W. F. An evaluation of televised instruction in college English composition. TVPR Report No. 5. Lafayette, Indiana: Audio-Visual Center, Purdue University, July, 1958. (Mimeographed)

Problem: determine the relative effectiveness of ITV and face-to-face instruction on learning.

Sample: 154 college students.

Subject taught: English.

Key variables: attitudes, attitude change over time, and learning; ITV and face-to-face presentation.

The experimental group (which was divided into four viewing rooms) had two 50-minute ITV lessons and one face-to-face meeting conducted by a graduate student each week; the control group (which had four sections) had face-to-face instruction entirely and was taught by four other teachers. The quality of the ITV teacher's presentations was quite high. All students wrote twelve themes, took tests on grammar, punctuation, diction, spelling, and five subtests of the Purdue English Training Test.

Students also were administered the Purdue Instructional Television Attitude Scale. Equivalent form reliability coefficients from .77 to .89 and construct validity coefficients with an evaluative semantic differential scale of .59, .81, and .87 have been reported.

Since the initial assignment of students to treatments was not random, the groups were compared on two measures. The average scores of the experimental and control groups on the Freshman Orientation English Test were 109 and 123 (significant at the .001 level), and Freshman Orientation English theme grades for the experimental and control groups were 4.3 (about a D) and 6.7 (about a C-) respectively (also significant at the .001 level). Finally it was noted that 84 per cent of the experimental group and 48 per cent of the control group were males. Students were then matched, primarily

2--Seibert, W. F.

on the first two measures given above. This yielded 41 matched pairs out of about 154 students originally.

Correlations between two independent graders on one theme for the four sections of face-to-face and ITV students ranged from -.056 to .704.

Analyses of variance on the average theme grades and achievement tests of face-to-face and ITV students in high, medium, and low ability levels indicated significantly greater average scores of face-to-face students in 7 of 25 comparisons.

There was some tendency for low-ability ITV students to do less well than low-ability face-to-face students.

The over-all attitude toward ITV of the ITV group was neutral, and *t*-tests indicated no significant differences in attitude scores between ITV and face-to-face students. Only one of six correlations between attitude scores and one of the achievement indices was significant ($r = -.342$ at the .05 level).

Seibert, W. F. An evaluation of televised instruction in college freshman mathematics. TVPR Report No. 6. Lafayette, Indiana: Audio-Visual Center, Purdue University, July, 1958. (Mimeographed)

Problem: determine the relative learning and the attitudes of students in television and face-to-face classes.

Sample: 160 college students.

Subject taught: freshman mathematics.

Key variables: learning and attitudes; ITV and face-to-face presentation.

The experimental group had 25 to 30 minutes of ITV taught by the instructor and 25 minutes of face-to-face discussion led by a graduate student. The control group had 50 minutes of face-to-face instruction taught by another instructor. Instructors switched places halfway in the semester. The face-to-face group was in one lecture room and the ITV students were put into four rooms. All students took six achievement tests during the semester and the Purdue Instructional Television Attitude Scale after the semester. Equivalent form reliabilities from .78 to .89 have been reported, and construct validity estimates of .59, .81 and .87 for Form A have been found.

The t-tests for uncorrelated means were run between ITV and face-to-face students for each of the six achievement measures; only one of the comparisons was significant (favoring ITV students at the .01 level).

The over-all attitude toward ITV of the ITV group was neutral, and t-tests indicated no significant differences in attitude scores between ITV and face-to-face students. Only one of 14 correlations between achievement and attitude scores was significantly greater than zero.

Seibert, Warren F. and Jurgen M. Honig. A brief study of televised laboratory instruction. Audio-Visual Communication Review, 8 (1960), 115-123.

Problem: Determine the effect on learning of ITV and face-to-face presentation.

Sample: 60 college psychology students.

Subject taught: chemistry.

Key variables: ITV and face-to-face presentation, immediate and laboratory delayed performance, and learning.

Students were assigned to one of five experimental treatments: (1) television laboratory instruction with posttest within two hours, (2) television laboratory instruction with posttest after 5 weeks, (3) face-to-face laboratory instruction with posttest within two hours, (4) face-to-face laboratory instruction with posttest after 5 weeks, and (5) no laboratory instruction.

All subjects were pretested with a 24-item multiple-choice vocabulary test (K-R #20 r = .74). Subjects were then divided into face-to-face and ITV presentations. Delayed posttest subjects were released after the presentation, and the remaining students took an 18-item knowledge test (K-R #20 r = .67). Finally, the remaining students performed a titration and their performance was evaluated by laboratory assistants. (One correlation of evaluations of lab assistants working semi-independently was .89.) The delayed posttest and control groups performed their titrations and took the knowledge test 5 weeks later.

An analysis of variance indicated no significant differences between the ITV and face-to-face groups for either the immediate or delayed post knowledge tests. The delayed ITV group had significantly lower (.05 level) lab performance evaluation scores than the ITV immediate, or face-to-face immediate or delayed groups.

Sheehan, A. Cornelia. The interrelations of interests and attitudes and specified independent variables in the teaching of natural science by television in the fifth grade. Unpublished Doctor's dissertation, Boston University, Boston, 1960. (Compare studies by Gerard T. Amirian, Homer Justin Dietmeier, and Mary Elizabeth Kraft.)

Problem: determine what attitude changes toward science and scientists occur on fifth-grade science by television.

Sample: 90 fifth-grade classes in towns around Boston.

Subject taught: fifth-grade natural science.

Key variables: teacher training, study guide utilization, class participation, individual projects, student ability and television presentation; attitude scores and activities.

All pupils took four specially constructed instruments (an interest inventory, an attitude check list, a leisure activities check list, and a television-viewing check list) before and after viewing the thirty half-hour programs of natural science. All ninety classes viewed the series. Eighteen classes served as a control group, twenty-four classes had teachers trained in the utilization of television, twenty-four had teachers trained in elementary science, and twenty-four of the class teachers had no special training. Half of the seventy-two classes comprising the experimental group used the television series to begin the unit each day, and half used the series to end the unit each day. Half of the teachers received study guides, and half did not. Half of the classes worked on common class assignments and half of the classes worked on individual projects.

Analysis of variance technique showed an over-all loss of interest in science at the end of the series, notably in the experimental group, for the girls, and for the higher ability pupils. Associated with this were significant interactions in teacher training, initial-final use of television, and type of class assignment. Students gained more realistic perceptions of scientists and became significantly less favorable in attitude toward science and scientists. Factors as similarity to adult and peer values, initial uncertainty, original realism, and original attitude appeared to be more related to attitude toward science than television or any of the experimental treatments. No significant differences were found between control and experimental groups in leisure-time activities; there was a slight tendency for science-related activities to decrease. For girls, teacher training and type of class assignment had an influence on gains in science-related leisure activities. Pupils having a high interest in science presumably watched more science-related television programs.

Sheldon, William in Almstead, Francis E. and Raymond Graf. Talkback, the missing ingredient. Audio-Visual Instruction (April, 1960), 112.

Problem: comparative effectiveness of talkback-equipped TV and face-to-face methods of instruction for reading achievement.

Sample: not given.

Subject taught: Reading Achievement, Grades 4 and 6.

Key variables: Scores on Iowa Test, Basic Skills, Form II, TV-taught and face-to-face taught students.

See Almstead, Francis E. and Raymond Graf. Talkback, the missing ingredient. Audio-Visual Instruction (April, 1960), 112.

Shettel, H. H., et al. An experimental comparison of "live" and filmed lectures employing mobile training devices. Audio-Visual Communication Review, 4 (1956), 216-222.

Problem: determine the relative effectiveness of film and live lectures using mockups.

Sample: 165 air force technicians.

Subject taught: B-47 (airplane) maintenance.

Key variables: film and face-to-face presentation, learning, retention.

Servicemen were divided into two groups. One group saw maintenance films and the other group saw the films' lecturer in a face-to-face situation. In both cases, a variety of mockups were used to demonstrate the functions of the various systems. All servicemen took a pretest, an immediate posttest, and a delayed (6 to 8 weeks) posttest on the content for each presentation. For one of the comparisons, the delayed posttest group was divided: one part saw the film again before the delayed posttest and the other part did not.

t-tests indicated that scores of men in the face-to-face situation tended to be slightly higher on the immediate posttest than the film group. There were no differences between scores of the two groups on the delayed posttest. The scores of those men who had seen the film a second time just before the delayed posttest were as high as they had been for the initial posttest.

The authors conclude that in view of the economy, ease of transportation, and saving in manpower, the use of lectures with elaborate mockups be discontinued in favor of film presentation.

Shimberg, B. Effectiveness of Television in Teaching Home Nursing. Princeton: Educational Testing Service, Research Bulletin RB-54-19, (1954). (Duplicated)

Also see: Shimberg, B. and E. L. Aird. Effectiveness of TV in teaching home nursing. Nursing Research, 4 (1955), 28-41.

Problem: comparative effectiveness of TV and face-to-face teaching.

Sample: 337 Red Cross volunteers.

Subject taught: home nursing.

Key variables: learning, TV teaching, TV teaching plus practice sessions, face-to-face teaching, student attitudes.

Two experimental and one control groups were used: (1) TV-only which received all instruction via TV. (2) TV-plus-practice which received in addition to the TV instruction a weekly practice session. (3) Classroom group which was taught the course face-to-face. The two TV groups received 13 half-hour programs twice a week. The face-to-face group attended seven two-hour sessions composed of lectures, demonstrations, and supervised practice. Subjects were volunteers from organized groups in Houston and Oklahoma City. The TV groups were in Houston. The TV-plus-practice group also met at a local center for one hour of supervised practice every Wednesday. The face-to-face group met in Oklahoma City. Effectiveness was measured by comparisons between groups both on a battery of pretests and a similar battery of posttests. A criterion of seeing eight or more of the 13 TV presentations was set as a definition of regular viewers, the number was 77 for TV-only and 43 for TV-plus-practice. Face-to-face group number was 217.

Findings. Television instruction was found to be as effective as classroom instruction in teaching facts about home nursing. Students taught by TV did almost as well on the performance test as those taught face-to-face, although total time spent was less for the TV students. The average TV student spent between five and six hours in front of the TV set, while the average face-to-face student spent 12 hours in class. No significant differences were found between the TV-only and TV-plus-practice groups in terms of performance test scores.

The attitude of those who viewed the TV programs regularly was overwhelmingly favorable toward TV instruction. Questionnaire answers indicated that more participation and more satisfaction might ensue from such a course if (1) the course were presented at a more convenient time, (2) the course were shortened, (3) the practice sessions were better organized, (4) students were presented with a study guide or course outline, and (5) the course took into consideration the specific home health needs and interests of the audience.

Headquarters, Southwestern Signal Corps Training Center and Camp San Luis Obispo, California. Instructor-student contact in teaching by television. Training evaluation and research programs, Part IV, Training Research Programs. July 1, 1953. Audio-Visual Communication Review, 3 (1955), 304-305. (Abstract)

Problem: determine trainees' attitudes towards various talk-back systems.

Sample: 60 trainees.

Subject taught: preparing the Joint Message Form.

Key variables: TV instructor with a studio class and no talk-back system with other TV classes, TV instructor with a studio class and a talk-back system (telephone type handsets), and TV instructor with no studio class and with a talk-back system (walkie-talkie).

It was concluded that trainees did not prefer the instudio with no talk-back treatment, that they were kept alert when questioned over a talk-back system, and that an instudio class was desirable from an instructor's viewpoint.

Silagyi, Dezo Vincent. A critical analysis of attitudes of selected elementary students toward television teaching in the Detroit television teaching project. Unpublished Doctor's dissertation, Wayne State University, Detroit, 1961.

Problem: determine attitudes of third-to sixth-grade pupils to ITV.

Sample: 2840 pupils in eight Detroit schools.

Subjects taught: third-grade French, fourth-grade Spanish, fifth-grade Spanish, science and health.

Key variables: grade-level course; attitudes.

All pupils took an attitude questionnaire. Chi square analysis was used for tests of significance.

Pupils indicated it was easy to learn by television, that they liked to discuss television lessons with their teachers, that they did not become restless during a televised lesson, and that they had to listen more carefully to a television teacher than one in the classroom. French, fourth-grade Spanish and science were ranked in the upper half of the continuum; fifth-grade Spanish and health were ranked in the lower half.

Pupils were not bothered by the five TV sets in the auditorium; about half preferred to watch in their home room, however.

Pupils were pleased that the viewing teacher knew their names and was familiar with the work they were doing in television classes, that they could get help if they couldn't understand the TV lesson, and that the ITV teacher talked directly to them. They reported that their neighbors did not bother them any more in their TV classes than in their face-to-face classes, and their friends thought they were "lucky" to be in a TV class.

Pupils felt they were learning as much on TV as they would in a face-to-face situation. They felt TV helped to make the lessons more understandable and that television helped them see more clearly.

Skinner, Thomas Dibble. An experimental study of the effects of prestige and delivery skill in educational television. Unpublished Doctor's dissertation, University of Michigan, Ann Arbor, 1963.

Problem: determine the effects of prestige and delivery skill on ETV.

Sample: not indicated.

Subject taught: American History.

Key variables: good and poor speeches on kinescope; learning and retention.

An actor was trained to perform as both a good and a poor speaker. He recorded two versions of a 15-minute American History lecture by kinescope. In the good speech delivery version, he was introduced as a high-prestige person; in the poor speech delivery version, he was introduced as a low-prestige person. Viewers filled out a content completion test immediately and after four weeks, and also filled out a semantic differential instrument to determine the relationship of the viewed speaker to S's ideal speaker.

Analysis of the data indicated no main effect for the prestige variable. A supplemental experiment indicated no significant differences between the two perceived prestige images supposedly created by the two introductions.

Good speech delivery produced significantly higher immediate and delayed retention scores than did poor delivery. Ss rated the good speaker as being significantly closer to their ideal than the poor speaker.

Slattery, M. Jamesetta. An Appraisal of the effectiveness of selected instructional sound motion pictures and silent filmstrips in elementary school instruction. Washington, D. C.: The Catholic University of American Press, 1953. 67 pp.

Problem: determine the relative effectiveness of filmstrips and sound motion pictures.

Sample: 422 fifth-grade pupils from nine Rochester, New York schools.

Subject taught: social studies.

Key variables: intelligence, participation; presentation by sound pictures and filmstrips; learning.

Silent filmstrips and sound motion pictures both increased learning of fifth-grade pupils, but filmstrips produced significantly greater learning than the sound motion pictures. Participation in filmstrips did not seem to increase learning significantly. Pupils of higher intelligence levels attained correspondingly higher scores.

Smith, Herbert A. Intelligence as a factor in the learning which results from the use of educational sound motion pictures. Journal of Educational Research, 46 (1952), 249-261.

Problem: role of individual intelligence in learning from films.

Sample: 1,298 students.

Subjects taught: American history, world history, general science.

Key variables: intelligence, learning, film teaching, face-to-face teaching.

One hundred five students in eight schools as a control group and 245 students in 12 schools as an experimental group were taught American history by face-to-face and film methods of instruction respectively. One hundred eighty-one students in ten schools as a control group and 415 students in 13 schools as an experimental group were taught world history by face-to-face and film methods of instruction respectively. One hundred fifty students in eight schools as a control group and 207 students in 11 schools as an experimental group were taught general science by face-to-face and film methods of instruction respectively.

All students were given the California Test of Mental Maturity, Advanced Form 47s, as a measure of intelligence. Student achievement was measured on cooperative tests published by the American Council on Education and special tests of film content. Achievement tests were administered in a pretest posttest design.

Results. Correlations were calculated for each class in each school for (1) gain on film test and language, non-language and total scores on the CTMM and (2) between gain on the standardized test and the three scores on the CTMM. Correlations were tested for significance and 18 of the 21 differences in the comparisons favored the film-taught group.

Conclusions. The author concludes that study does not support the hypothesis that dull students learn more from films than bright students. The correlation between intelligence and gain in information tended to be significantly different than zero, therefore students with high ability learned or gained more from the films than did equally intelligent students in face-to-face sections. Failure of previous studies to demonstrate this same effect are caused by tests with a ceiling too low for accurate management of performance of high-ability students.

Smith, Hope M. and Marguerite A. Clifton. The viewing of oneself performing selected motor skills in motion pictures and its effect upon the expressed concept of self in movement. USOE Grant Number 704105. Los Angeles: University of California, August 1961. (Mimeographed)

Problem: determine if one's concept of his skill changes after viewing films of himself.

Sample: 75 college students between 17-21.

Subject: Motor skills and self-assessment.

Key variables: self-perception of motor skills, viewing films or not viewing films; viewing individually or in groups.

Each Ss performed five motor skills: (1) walking, (2) running, (3) catching volleyballs, (4) throwing beanbags at a target, and (5) making standing broad jumps. Ss then filled out a self-perception checklist. Some Ss performed individually and some in small groups. After four weeks Ss (individually) saw unedited film loops of their previous performances. Ss then filled out the self-perception checklist again. Control groups repeated their performances the second time and did not see films.

t-tests indicated experimental Ss evaluated themselves significantly more favorably in throwing after viewing the films than they had in the pretest. Ss viewing a film of themselves as part of a group had no significant differences between pre and post self-perceptions.

Ss who viewed individual films of themselves had significantly more positive self-perceptions about catching (.05 level) than those who viewed group films. There were no significant differences between males' and females' self-perception scores on the posttest. There were significant differences between female athletes and female non-athletes in three skills after the initial performances, but in only two skills after viewing the films. There were no significant differences between male athletes and male non-athletes at either testing time.

Snyder, Vance Beidel. Use of teacher-produced instructional films in industrial arts education: A study to determine the effectiveness of teacher-produced instructional films in teaching perceptual motor skills in a public school industrial arts shop. Unpublished Doctor's Dissertation, New York University, New York, 1961.

Problem: determine the relative effectiveness of teacher-produced films and face-to-face demonstration techniques.

Sample: 32 high school students.

Subject taught: industrial arts.

Key variables: film and face-to-face demonstration; motor skills evaluations.

Two groups were selected at random to serve as experimental and control groups. Both were matched in reading ability, mechanical ability, and previous industrial arts experience. Experimental students saw film demonstrations, and the control group saw face-to-face demonstrations. Both students then completed projects which were evaluated by a panel of judges.

It was found that of 43 operations evaluated, 32 showed no significant differences between the two groups, and 11 showed higher rankings in favor of the control students.

Souder, Marjorie, *et al*. Study of the effectiveness of televised instruction in a physical education course. Urbana: University of Illinois, Department of Physical Education for Women and Office of Instructional Television. 1962. NAEB Research Fact Sheet, Series I, 109. *NAEB Journal*, 22 (1963), 1-2. (Abstract)

Problem: comparative effectiveness of TV and face-to-face instruction.

Sample: freshman and sophomore college students (n not given).

Subject taught: women's physical education.

Key variables: TV teaching, face-to-face teaching, experience of classroom supervisors, attitudes toward physical education and basic movement.

A battery of motor fitness tests was administered at the beginning of each semester of a three-semester project to students taught physical education by TV and face-to-face methods. A written objective examination and an attitude inventory were given at the end of each semester to all students. Data from pretests and posttests analyzed by analysis of covariance with adjustment for initial ability.

During semester I, classes which met for the first two periods of the day were rotated each week between a TV-originating room and a TV-receiving room. Classes meeting in the next two periods did not rotate. All receiving-room classes were supervised by two senior physical education students.

In Semester II, all lessons were televised live by two experienced instructors. During the first hour of the day, one-half the class was taught by TV while the other half was taught face-to-face. Roles were reversed for the second hour. Graduate assistants met with each group to conduct routine class procedures.

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During Semester III, TV sections were taught by video-taped lessons for 15 minutes, and by either experienced or inexperienced instructors for 15 minutes after the TV presentation by face-to-face methods of instruction. Two control sections were taught face-to-face for the whole period by experienced instructors.

Results. Motor fitness objectives were more adequately met by face-to-face teaching than TV teaching during the first semester. There was no significant difference between methods of instruction for the second semester for motor fitness, but there was a significant difference (.05 level of confidence) favoring the TV-taught section for routine movements. In the third semester, for motor fitness objectives, TV-taught sections with experienced face-to-face instructors in the receiving rooms were significantly better (.01 level of confidence) than students in sections taught entirely by face-to-face methods of instruction.

No significant difference between methods of instruction was found for attitudes toward physical education or basic movements.

Spencer, R. E. Comparisons of televised with teaching machine and televised with instructor presentations of English grammar, Comparative Research on Methods and Media for Presenting Programed Courses in Mathematics and English, C. R. Carpenter and L. P. Greenhill, editors. USOE Grant Number 736116. University Park: The Pennsylvania State University, March, 1963. Pp. 57-63.

Problem: (1) determine the relative effectiveness of a programed course televised with a programed course taken on individual teaching machines; (2) the relative effectiveness of a programed course televised with face-to-face instruction, and (3) students' attitudes.

Sample: 43 high school juniors and seniors and 30 college students who had scored below 45 on the Penn State English Placement Test (lower range of the score distribution).

Subject taught: English grammar.

Key variables: learning from programed courses presented individually, on television, and in face-to-face lectures.

High school students were randomly assigned to televised programed instruction or teaching machine instruction groups. College students were randomly assigned to televised programed instruction or to face-to-face instructor groups.

The grammar classes were supplementary to the basic English course and met twice a week. Television students responded to each question as it appeared on the screen and were instructed to check their answer with that on the screen. Each frame lasted about 30 seconds. The face-to-face group covered the same topics, but the lecturer was free to teach as he wished.

All students took the Penn State English Placement Test (corrected split-half r = .73) as a pre- and posttest. In addition, the sum of scores on unit tests (K-R #21 r = .84) was available.

The differences between the two high school groups on the English Placement pretest were not significant. High school students in the programed instruction by TV group had significantly higher scores on the English Placement posttest than pretest (.01 level). High school students in the individual teaching machine group tended to have higher scores on the posttest than the pretest (.05-.10 level). There were no significant differences between the high school TV and teaching machine groups on any of the criterion measures.

The differences between the two college groups on the English Placement pretest were not significant. Both college TV and face-to-face groups had significantly higher scores on the English Placement posttest than the pretest (.01 level). There were no significant differences between the college TV and face-to-face groups on any of the achievement measures. Students in the face-to-face group had more positive attitudes toward their method of instruction than did students in the TV group, as determined by scores on a 54-item (K-R #20 r = .64) test.

Spigle, Irving Samuel. The cumulative effect of selected educational motion pictures on the attitudes of high school boys and the relationship of attitude changes to selected personality and intelligence factors. Unpublished Doctor's dissertation. Indiana University, Bloomington, 1955.

Problem: determine the relationship of personality traits and intelligence to attitude changes from viewing films.

Sample: 79 high school senior boys in one Indiana town.

Subject taught: preparation for armed forces service.

Key variables: attitudes, personality factors, intelligence; film presentation.

Two groups of high school boys took a 24-item test designed to measure attitudes toward the armed forces. A week later, four eleven-minute films on preparation for service were shown with a minimum of introduction to one group for four consecutive days. On the fifth day both groups took the attitude scale again. Grade averages and scores on the ACE and the PMA test were available for all boys. The experimental group also took the Bernreuter Personality Inventory.

Scores on the post-attitude scale of the experimental group differed significantly from the control group. The group which moved in a favorable direction from pre- to posttest on the attitude scale had a significantly higher initial attitude score than the group which moved in an unfavorable direction. The group which was unfavorable toward the armed service on the posttest had significantly higher scores on the quantitative measure of the ACE than the group which was favorable. Other ratings of intelligence, or grades, or personality had no relationship to attitude changes from the films.

Stake, Robert E. The effect of television instruction on individual learning curves. USOE Project Number 573 (8190). University of Nebraska, November, 1959. (Mimeographed)

Problem: determine the relative learning curves for students learning by face-to-face and ITV.

Sample: 127 control Nebraska high school students and 23 ITV students. (Also a college group of 14.)

Subject taught: Spanish (elementary vocabulary).

Key variables: face-to-face and ITV presentation; learning rate, regularity of achievement, and final achievement.

No attempt to coordinate curricula was made in the several high schools included. Students took a 15-minute 40-item test every two weeks. Items from the ETS Cooperative Spanish Tests were used.

There were no significant differences in scholastic aptitude (SCAT) between experimental and control groups. Learning rates (radius of curvature of the learning curve) and regularity of performance (discrepancy of individual performance from the theoretical learning curve) were not significantly different for the two groups.

ITV students had significantly lower achievement scores at the end of the course than either the large or small control groups. The ITV students appeared to start learning vocabulary more slowly and never caught up. The author reports that a number of the ITV students said flatly that they did not like the ITV teacher.

Starlin, Glenn and John E. Lallas. Inter-institutional Teaching by Television in the Oregon State System of Higher Education. Report No. 1 -- 1957-1959. Eugene: Oregon State System of Higher Education, March, 1960.

Problem: determine the relative effectiveness of ITV at originating and receiving institutions, compare ITV and face-to-face instruction, and determine student and faculty attitudes toward ITV.

Sample: See below.

Subjects taught: U. S. History, Appreciation of Literature, English Composition, Educational Psychology, School in American Life, Human Development, and Chemistry.

Key variables: learning, ability level, attitudes, discussion leader, originating and receiving institutions; ITV and face-to-face instruction.

ACHIEVEMENT

For the following courses, the ITV lectures were telecast simultaneously to students at the originating institution (OI) and at the receiving institution (RI). The discussion sections at the OI were conducted by the ITV teacher; discussion sections at the RI were conducted by the RI staff.

U. S. History

A t-test on final course examination means between 117 OI students and 54 RI students for the first term was not significant. A t-test on course examination means between 115 OI students and 64 RI students for the second term was significant (.05 level), favoring OI students.

Educational Psychology

A t-test on final course examination means for spring term between 77 OI students and 105 RI students was not significant.

Appreciation of Literature

Analyses of covariance controlling on OSPE scores on midterm and final course examination means of OI and RI students for nine tests resulted in significant F ratios for the first four of the nine tests, all favoring OI students. The number of ITV literature students at the OI ranged from 75 to 101, and at the RI from 25 to 36 students.

For the following courses, the discussion sections on originating institutions were led by an OI professor, and those on RI campuses were led by RI professors. The ITV teacher did not have a discussion section.

School in American Life

Analysis of covariance controlling on ACE scores indicated no significant differences on final course examination scores between OI and RI students. There were 191 OI students and 122 RI students.

Human Development

A *t*-test indicated no significant differences between OI and RI students on midterm scores. There were 39 OI students and 231 RI students. An analysis of variance indicated no significant differences between OI and RI students on final examination scores.

Chemistry

Analyses of covariance, controlling on ACE scores, and *t*-tests indicated that OI students had significantly higher examination scores (.05 level) than RI students for 4 of 17 comparisons. In two comparisons the RI students had higher scores. The size of OI classes ranged from 78 to 121 and the size of RI classes ranged from 23 to 53.

The following courses were offered completely by ITV; there were no discussion sections.

U. S. History

t-tests indicated no significant differences between OI and RI students for the midterm, but OI students had significantly higher final scores (.05 level) than RI students. There were 88 OI and 50 RI students.

Chemistry

Analyses of covariance controlling on ACE scores indicated that, in six comparisons, OI students had significantly higher examination scores (.05 level) than RI students for the midterm of each of the three terms, but there were no differences in the final examinations. OI classes ranged from 59 to 71; RI classes ranged from 36 to 39.

In the following courses, face-to-face and ITV presentations were compared using achievement scores.

Human Development

Three *t*-tests indicated no significant differences for any of three examinations between face-to-face and ITV students. There were 30 face-to-face and 38 ITV students.

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Chemistry

Analyses of covariance controlling on ACE scores indicated only one significant difference (.05 level) on the first fall midterm mean scores between face-to-face and ITV students (favoring the former) out of six comparisons. Face-to-face classes ranged in size from 47 to 64, and ITV classes from 78 to 121.

Educational Psychology

An analysis of variance on final examination scores between face-to-face and ITV students indicated no significant differences. There were 117 face-to-face students and 77 ITV students.

ATTITUDES

Thirty-seven ITV students in Human Development took the MTAI before and after the course. Changes were significantly more favorable, as indicated by a *t*-test (.01 level).

Two Likert instruments were developed. One having a core of 14 items had a split-half reliability of .85 (n = 150); the other had a split-half r of .96 (n = 150). A sample of 65 free response comments correlated (tetrachoric) .89 with one of the Likert instruments. Interviews (n = 58) correlated (tetrachoric) .95 with one of the Likert instruments.

Chi-square was used to analyze attitude data; "no" and "oppose" responses were combined. Pre-experimental attitudes of students toward inter-institutional television instruction and face-to-face instruction were generally non-significant among institutions.

Chi-square run on responses of students of various institutions in Human Development, History (winter term), Chemistry (fall term), Appreciation of Literature (both terms), and English Composition (fall term), showed significant differences (.05 level) in students' attitudes toward ITV.

Students felt that ITV lectures were at least as good as face-to-face lectures, but were divided on the relative standards of student achievement, and reported that student-teacher relationships were less adequate in ITV than face-to-face classes. Demonstrations and visual aids seemed related to favorable comment. Chemistry and Appreciation of Literature students were more favorable toward ITV than were English Composition students. Attitudes over a period of time seemed relatively stable.

Correlations between attitude scores and ACE scores, between attitude scores and California Personality Inventory scores, and between attitude scores and sex generally indicated no relationship, except that for the second year of research, women seemed slightly more favorable than did men.

Attitudes of faculty members toward inter-institutional instruction by television ranged from highly approving to strongly disapproving. A greater percentage of faculty members were opposed to than accepting of the idea of television teaching.

Starlin, Glenn and John E. Lallas. Inter-institutional teaching by television in the Oregon state system of higher education. Eugene, Oregon: Oregon State System of Higher Education. Report #1:1957-59 and Report #2: 1959-61.

Problem: feasibility of inter-institutional teaching by television.

Sample: 4,768 college students in report #1.
5,642 college students in report #2.

Subjects taught: School in American Life, Educational Psychology, Chemistry, American History, Appreciation of Literature, English Composition, Introductory Geography, Hygiene, Astronomy, Accounting, Biology, Romantic Poets, and Meteorology.

Key variables: TV teaching, face-to-face teaching, student achievement, faculty and student attitudes.

Students in four Oregon institutions of higher education were taught regular college courses by television. Teaching sessions of each course originated on one of four campuses and were received simultaneously, by open-circuit telecast from educational TV station KOAC, Corvallis, Oregon, in classrooms on all four campuses. TV instruction was generally supplemented by face-to-face instruction in the classrooms, but for some subjects TV was used as the total teaching medium. The variables in teaching methods were (1) total TV teaching, (2) TV teaching with supplementary face-to-face teaching, (3) guest speakers in classrooms plus TV teaching, and (4) TV teaching with team-taught face-to-face supplementary sessions.

Variables were controlled for by constructing achievement tests of the TV-taught material only. Achievement comparisons were accomplished by comparing scores on the tests by analysis of variance, analysis of covariance with adjustment for scores on the Minnesota Scholastic Aptitude Test, and "t" test techniques. Student and faculty attitudes were determined by interviews, questionnaires, attitude inventories, and controlled observations.

Conclusions for 1957-59 period. In the first report, the authors found no significant differences between the methods of instruction. There was some evidence that students on the originating campus did somewhat better than the students on the receiving campuses for the same course, but this effect was not borne out in the second report. (See below.) Student attitudes toward TV as a means of instruction are based on the same factors of like and dislike which determine attitudes in face-to-face classes. Students accept instruction from teachers on other campuses as well as teachers from their own campuses. Full-time faculty members disliked assignment to supervising duty in TV-receiving classrooms and graduate students were found able to perform the supervising duty well.

Conclusions for the 1959-61 period. During the first period there was some indication that students on the originating campus did better in terms of achievement than students on the receiving campuses. The authors felt, if such a difference did in fact exist, it might be due to a number of factors, including greater accessibility of the TV teacher to students, an ability developed through contact with the teacher by students to predict examination questions, increased student motivation from contact with TV teacher, and greater student familiarity with the examination policies and procedures on the originating campus. Using analysis of variance and analysis of covariance techniques with a control for year in school, sex, and academic ability, these hypotheses were subjected to intensive investigation during the 1959-61 period and were reported in the second report.

From the extensive study, the preponderant conclusion obtained was that the institutional origin does not affect student achievement. The differences favoring the students on the originating campuses appear to be due to chance and not the method of instruction. Several of the differences were found in the fall semester and disappeared in the spring semester. The authors attribute this to a lack of familiarity with the method of instruction. The difference in achievement between freshmen and upper-classmen was found to be significant in a number of cases for all methods of instruction and the authors point out that this difference appears to be as important as individual differences in ability.

General conclusions. From the six years of study, the authors conclude that students on all campuses learned equally well when taught by television from one campus. Students also learned as well when taught by television as when taught by face-to-face methods.

Staub, Norman C. and Irving R. Merrill. Measuring achievement in science reasoning about physiology. Theo. S. Grant and Irving R. Merrill, Television in Health Sciences Education. USOE Project Number 064. San Francisco: University of California, San Francisco Medical Center, September 30, 1963. Pp. 22-27. (Offset)

Problem: determine the relative effectiveness of presentation methods on learning, as measured by a science reasoning instrument.

Sample: 63 second-year University of California pharmacy students.

Subject taught: Physiology 105 (Mammalian Physiology).

Key variables: ITV presentation, lab demonstrations, and individual readings; science reasoning and specific information scores.

Students were assigned to one of three groups: ITV presentation, laboratory demonstrations, and a group which read original reports of the experimental demonstrations in library. Each experimental group received six hours of instruction, and students were not permitted to ask questions about significance of data (done to decrease teacher variation).

Five days later all students took a 60-item multiple-choice test having 30 items of science reasoning (R) and 30 items of specific information (I). Of the total 60 items, 36 were verbal multiple choice (V) and 24 were pictorial multiple choice (P).

Hoyt's r for the R items was .62, for the I items was .42, for V items was .55, and for P items was .54. Content validity was assessed by having two faculty members agree that the items were appropriate to course objectives. Item discrimination was determined by having two faculty members agree on items on which students frequently go astray.

Students doing library reading had a smaller mean score on the instrument than students in the other two groups, but the difference was not statistically significant. The latter two groups did not score significantly higher on the pictorial items than the reading group.

Stein, J. J. The Effect of a Pre-film Test on Learning from an Educational Sound Motion Picture. Technical Report 269-7-35. *Instructional Film Research Reports*. Port Washington: U. S. Naval Special Devices Center, 1952. Also unpublished Doctor's dissertation, Cornell University, 1952.

Problem: Can pretest of film content increase learning?

Sample: 6,034 U. S. Navy recruits, Great Lakes Naval Training Station.

Subjects taught: weather, measuring instruments.

Key variables: knowledge of pretest scores, type of questions on pretest, order of questions on pretest, posttest scores, learning, retention.

Two similar experimental studies were conducted. Each used different persons, a different film, and different tests. There were 17 groups in each study of which seven were experimental and 10 were control groups. The hypothesis tested was that knowledge of items on which a student was to be tested after seeing a film would increase learning from the film. Selected groups of recruits, matched on scores on the Navy General Classification Test, were given a test on material to be covered in a film they were about to see. They then saw the film and were given the test again. Some groups were told how many questions they had answered correctly before they saw the film, and some were told the correct answers for all items on the pretest before they saw the film.

Some recruits were given tests whose questions were in the order material was shown in the film, and others were given questions in random order. Some recruits were given posttests identical to pretests and others were given posttests similar, but not identical, to the pretests. Some recruits saw the film twice and others saw it once. All posttests were given immediately after viewing the film, but some posttests were repeated one week later to measure retention. For all the experimental conditions a matched control was selected.

Results. Using analysis of covariance technique, the most effective means of instruction was found to be a complete knowledge of the result of the pretest, with questions ordered in same manner as material to be presented, and a posttest identical to the pretest.

Conclusions. The author concludes that administering a pre-film test, which has identical, ordered items, with a complete knowledge of the results of the pretest, followed by immediate viewing of the film will result in more learning from the film than showing the film once or twice. The effectiveness of a pretest depends upon giving students (1) a test identical to the posttest, and (2) immediate knowledge of the student's performance on the pretest.

Stein, Sarah Christine. An experimental study of the use of motion picture film loops in the instruction of beginning typewriting. Unpublished Doctor's Dissertation, University of Southern California, Los Angeles, 1958.

Problem: determine the relative effectiveness of using film loops in teaching typewriting.

Sample: Oregon junior and senior high school students.

Subject taught: typewriting.

Key variables: film loops and face-to-face presentations; typing speed and accuracy, and grade level.

Senior and junior high school classes were assigned to experimental and control treatments. Students in the experimental treatment saw 16 film loops as part of their instruction, and students in the control section had face-to-face instruction only. Students took straight copy timed typewriting tests at various times throughout the course and a final test.

On the first three-minute test the senior high school students in the control group typed significantly faster than the experimental group but not more accurately; there were no significant differences between groups on the second three-minute test. On the first five-minute test there were no significant differences between groups in speed, but the control group typed significantly more accurately. On the second and third five-minute tests the senior high school experimental students typed significantly faster, but the control students typed significantly more accurately. On the final test the experimental group made significantly higher scores than the control group.

For the junior high school students there were generally no significant differences between experimental and control students in either speed or accuracy.

Stoller, Nathan and Gerald S. Lesser. The use of television for improving teacher training and for improving measures of student-teaching performance. Phase II. A comparison of methods of observation in pre-service teacher training. USOE Grant Number 730035. New York: Hunter College of the City University of New York, 1963 (Mimeographed)

Problem: determine the relative effectiveness of observing kinescope programs, television programs, and direct observation.

Sample: 288 Hunter College coeds.

Subject taught: teacher education.

Key variables: kinescope programs, television programs, direct observation; learning.

Students were divided into three groups in each of two consecutive semesters. Each group observed eleven lessons the first semester (ten in the second semester). One group made its observations via specially prepared kinescopes, a second via closed-circuit television, and the third via direct observation in elementary school classrooms. Students took a 120-item multiple-choice pre- and posttest on the informational aspects of the methods course around which the project was built and wrote an evaluation of a lesson as part of the final examination. Item difficulty and discrimination were determined for the former. K-R #20 r's were .57 and .59 for the multiple-choice pretest given two semesters, and were .88 and .85 for the multiple-choice posttest. Interreliability r's of scoring the essay tests ranged from .62 to .91. College grade averages were also available.

Analysis of variance on the objective "Methodology" test scores for three observational treatments, two teachers, two scholastic ability groups over two semesters indicated significant F ratios for teachers, scholastic ability, semesters, and interaction between instructors and semesters (all .01 level), and significant interaction between observation treatments and semesters, and scholastic ability and semesters (.05 level).

On the other hand, analysis of variance on the essay "Lesson Evaluation" test scores for three observational treatments, two teachers, and two scholastic ability groups indicated significant F ratios for observational conditions, instructors, scholastic ability, and condition and instructor and ability interaction (all .01 level).

Strevell, Wallace H. High school physics by television: the Houston Area Project. USOE Project Number 306. Houston: University of Houston, September, 1960.

Problem: determine the relative effectiveness of ITV lessons on students of urban-rural backgrounds, segregated schools, and homogeneous grouping.

Sample: 422 students; 186 TV and 236 face-to-face. (160 were Negroes, 262 were white; 152 in rural schools, 270 in urban schools; 192 in homogeneous classes; 230 heterogeneous classes).

Subject taught: physics.

Key variables: learning and attitude; television and face-to-face presentation; racially mixed and unmixed classes; rural and urban students.

Students took the Iowa Physics Aptitude Examination and the Otis Gamma Quick-Scoring MA Test. At mid-term students took the Outterson Mid-term Physics Test and at the end of the year the Dunning Physics Achievement Test.

Analysis of variance and _t_-tests indicated no significant differences between ITV and face-to-face groups as determined by achievement scores. There were no significant differences between the achievement scores of ITV students in homogeneously grouped classes and ITV students in heterogeneously grouped classes. Negroes in ITV classes made significantly more gain (.01 level) than white ITV students of the same ability. In ITV classes, urban students tended to do better than their aptitude would predict. Rural students did not do as well as their aptitude would predict, although rural students tended to have slightly higher achievement scores than urban students. There were no significant differences between gains of rural ITV students and rural face-to-face students.

Students in schools having good conditions made significantly more gain (.05 level) in the control classes.

Student attitude (as determined from four five-point questions) was not related to amount of achievement gain.

Teachers were generally favorable to ITV.

Stromberg, Eleroy L. College credit for television home study. American Psychologist, 7 (1952), 507-509.

Problem: comparative effectiveness of TV at home teaching and face-to-face classroom teaching.

Sample: 66 students in TV section.

Subject taught: Introduction to Psychology.

Key variables: TV teaching, face-to-face teaching, learning.

Sixty-six students were taught by open-circuit TV by viewing the program in their homes. In addition to viewing 39 televised lectures, students were required to submit written assignments and come to the campus for a final examination. During the presentation of the course, 66 per cent of those enrolled dropped the course for various reasons. A standardized 110-question multiple-choice examination had been given to all students enrolled in the face-to-face sections of the course over the past few years. The median score for all previous face-to-face students was 54 with a range from 31 to 95.

Television-taught student scores ranged from 31 to 95 with a median score of 68. The age range of the TV students was 16 years to over 50 years and some had not been enrolled in classes for 30 years.

The author concludes that the open-circuit TV is an effective means of teaching college credit students in their homes.

(Study includes a description of the administration of the course.)

Stuit, Dewey B., et al. An experiment in teaching. Iowa closed-circuit television teaching experiment; summary report. Iowa City: State University of Iowa, August, 1956. (Mimeographed)

Problem: determine the relative learning from lecture, lecture-discussion and small-group discussion methods, by face-to-face and ITV methods; and to determine students' attitudes toward ITV.

Sample: see below.

Subjects taught: Comparative Foreign Governments, American Government, and Greeks and the Bible.

Key variables: attitudes, learning from lecture, lecture-discussion, and discussion methods of teaching; face-to-face and ITV presentation.

The Comparative Foreign Governments had 87 students and all classes were by ITV. One section of American Government had 68 ITV students and other lecture sections the following semester had 129 face-to-face students. The Greeks and the Bible course had 47 students who had half of the sessions by face-to-face methods and half by ITV.

Comparative Foreign Governments students filled in a questionnaire after three weeks of class and again after the course was finished. American Government students filled in questionnaires after two-thirds of the semester, and 32 of the students were interviewed. Greeks and the Bible students filled in questionnaires the last week of school. Students in another face-to-face section of the same course also completed a questionnaire.

American Government ITV students tended to rate that course as being much more interesting than the other courses they were taking, whereas face-to-face students rated that course as being somewhat more interesting. Students tended to feel that discussion added to the interest. The Foreign Governments and Greeks and the Bible students who had been in other discussion classes before tended to rate their course as being about the same as their previous courses.

Foreign Government students felt they learned more in lecture courses, but felt stimulated to greater thought in the ITV course. Greeks and the Bible students thought themselves equally stimulated and that they learned about the same from the face-to-face or ITV portions of the course. American Government ITV students felt they were learning about the same over ITV as they would by face-to-face methods, and American Government face-to-face students felt they would learn slightly less from ITV presentations.

American Government ITV students tended to study more than face-to-face students, but Greeks and the Bible students studied equally for ITV and face-to-face presentations. Apparently discussion rather than television presentation was a greater influence in motivating students to study. Students felt participating was easier in a face-to-face class (despite a talk-back system), and felt that the studio group had an advantage in participating in class discussion.

Analysis of variance on television, lecture, and discussion groups achievement scores indicated no significant differences among groups on either of two achievement tests.

Suchy, Robert R. and Paul C. Baumann. The Milwaukee Experiment in Instructional Television: Evaluation Report. Milwaukee, Wisconsin: Educational TV Project, Division of Curriculum and Instruction, Milwaukee Public Schools, 1960.

Problem: comparative effectiveness of TV and face-to-face teaching.

Sample: 9,000 elementary, secondary, and vocational school students.

Subject taught: See below.

Key variables: TV teaching, face-to-face teaching, intelligence, teacher-opinion questionnaire.

This study combines the reports of three years of experimentation with instructional television in the Milwaukee Public Schools. The goals of the project when established in 1958 were (1) comparative effectiveness of TV and face-to-face teaching for large groups, (2) improve effectiveness of TV as a teaching aid, (3) explore possibility of effective integration of TV into the instructional program at all levels.

First Year 1957-58. Biology and history were taught at the high school level; general science and social studies at the junior high level; and science, health and safety at the elementary school level to groups of about 200 in the junior and senior high schools and to groups of six regular classrooms in the elementary schools. A verbal type intelligence test was given to all students and each group was separated by random selection into either an experimental or a control group. The experimental group was taught by open-circuit TV while the control group was by face-to-face methods of instruction.

Based on scores of examinations given to both groups the authors found (1) both the experimental (TV) and the control (face-to-face) groups learned a great deal from the instruction; (2) there was no significant difference in learning for either group (achievement of high school American history appeared to be greater for the TV group than the face-to-face group, but authors felt this was due to uncontrolled variables in the experiment not related to method of instruction); (3) there was no differential effect on learning by method of instruction for differing levels of ability.

Second Year 1958-59. Subjects offered in this year were the same as the previous year except that social studies was dropped from the junior high school program. In the junior and senior high school, students met in large groups for TV instruction three days a week and twice a week for face-to-face discussion in groups of 30. In the elementary schools the six regular classrooms were combined for large-group TV instruction periods of 30 minutes.

2--Suchy, Robert R. and Paul C. Baumann

An intelligence test was administered to both the experimental (TV) and control (face-to-face) groups. A standardized achievement and critical thinking test was administered to both groups as a pretest. A different form of this test was administered to both groups after the year's instruction as a posttest.

The authors concluded that (1) students in both groups exceeded national norms for the achievement test after instruction; (2) American history at the senior high school level was again significantly superior for the TV group as compared to the face-to-face group; (3) significant differences favoring the TV group were found for biology, elementary science, health and safety. There was no significant difference between TV and face-to-face taught general science groups; (4) there was no differential effect for ability between methods of instruction; and (5) there was no "appreciable difference" in ability to think critically between methods of instruction.

Third Year 1959-60. In continuing the experiment under the general design of the first two years, the authors found that (1) TV-taught students did as well as, or better than, students taught face-to-face; (2) the majority of the teachers in the system thought students learned as much or more because TV was used as a resource in the classroom; (3) a majority of the principals felt the curriculum was strengthened by the addition of TV to the classroom; (4) four of the 11 statistical comparisons were in favor of TV instruction. The other seven comparisons showed no significant difference between methods of instruction.

[Abstracts of these three reports are available in NAEB Research Facts sheets. See

[1] First Year, NAEB Research Fact Sheet, Series I, 61, NAEB Journal, 18 (March 1959), 1-4.

[2] Second Year, NAEB Research Fact Sheet, Series I, 79, NAEB Journal, 18 (December 1959), 1-4.

[3] Third Year and Final Report, NAEB Research Fact Sheet, 84, NAEB Journal, 19 (July 1960), 1-2.]

Sykes, Ronald E. The effectiveness of closed-circuit television observation and of direct observation of children's art classes for implementing elementary teachers' training in art education. Unpublished Doctor's dissertation, Pennsylvania State University, University Park, 1964.

Problem: determine the relative effectiveness of face-to-face and TV observation methods.

Sample: 88 elementary education majors at Millersville State College.

Subject taught: Art in the Elementary School I.

Key variables: face-to-face and television observation; solving class situations.

Students were randomly assigned to three groups: 29 to a non-observation group, 30 to a face-to-face observation group, and 29 to a television observation group. The latter two groups watched six 45-minute art lessons over a six-week period. The TV observation students watched three monitors from three different cameras. The students filled in observation lesson information sheets and two note-taking forms before each observation in a 15-minute orientation period. After each observation session, the students had a 10-minute review conducted by the demonstration teacher. All students took an elementary art situational problems test (having 41 situations and 112 solutions, and a Spearman-Brown split-half r of .96) before and after the six lectures, and also a class test after the six lectures.

Analysis of covariance on the situational problems test indicated no significant differences between the scores of face-to-face and TV observation groups, but did indicate a significant difference (.001 level) between the scores of the two observation groups and the scores of the non-observation students. Scores of the two observation groups on the class test were about the same.

Tannenbaum, P. H. Instruction through television: A comparative study. Urbana: Institute of Communication Research, University of Illinois, June, 1956. (Duplicated) In Hideya Kumata, An inventory of instructional television research. East Lansing: Educational Television and Radio Center, December 1, 1956. (Offset)

Problem: determine the relative effectiveness of ITV, film strip with audio, individual study, and kinescope presentations.

Sample: See below.

Subject taught: periodontics.

Key variables: weekly ITV, ITV audio only plus film strip, and study of the manual only presentations, and three kinescope presentations in one day; learning.

One group of practicing dentists saw a one-hour ITV lecture demonstration each week for three weeks and had one discussion hour after the series was over. Another group (n = 10) saw a film strip with the ITV audio. A third (n = 12) studied only the manual which the other groups had. A fourth group (n = 40) saw kinescopes of the series all in one day. A control group (n = 138) had no instruction. 160 of the first group took a 35-item multiple-choice test after the three viewings; 46 of the first group took the test after the discussion session. Eight items of the test were not covered either in the manual or the telecasts, and nine items were covered only in the ITV lessons.

_t_-tests indicated that all the experimental groups except the manual only group had significantly higher scores than the control group. The kinescope group had significantly higher scores than the ITV groups. There were no significant differences among groups on the eight items not covered in either the manual or the ITV presentations.

Tannenbaum, P. H. Instruction through television: An experimental study. Urbana: Institute of Communications Research, University of Illinois, 1956. (Duplicated) In Hideya Kumata, An inventory of instructional television research. East Lansing: Educational Television and Radio Center, December 1, 1956. (Offset)

Problem: determine the relative effectiveness of ITV and face-to-face instruction.

Sample: 167 ITV students and 189 originating room students.

Subject taught: physiology.

Key variables: learning and attitudes; ITV and face-to-face instruction.

ITV and originating room students were divided into two groups, matched on mid-semester grades. Students saw three 50-minute lectures. A week later, students took an unannounced 19-item multiple-choice test.

Analysis of variance indicated that ITV students had higher mean scores (.07 level) than face-to-face students.

Students who were favorable and neutral toward ITV on a preference scale had significantly higher multiple-choice test scores than those who were unfavorable toward ITV. Students who were favorable tended to have higher scores than those who were neutral.

Tendam, D. J. Preparation and evaluation in use of a series of brief films of selected demonstrations from the introductory college physics course. Final report. USOE Grant Number 7-12-027.11. [Lafayette:] Purdue Research Foundation, August 31, 1961. (Offset)

Problem: determine the relative effectiveness of film compared to face-to-face physics demonstrations.

Sample: 369 college students.

Key variables: film and face-to-face demonstrations; immediate test and general course test scores, and seating location.

Students were randomly assigned to face-to-face or film demonstration treatments. The film group saw 20 demonstration films during the semester. Each group took a five-minute test after each demonstration. A 40-item multiple-choice pretest served as a controlling variable for analysis of covariance. Students also took five course examinations.

Students viewing the films had significantly higher quiz scores (.01 level) than students seeing the face-to-face demonstrations. There were no significant differences between film and face-to-face groups on course examination scores, or on the course examination questions that dealt specifically with the demonstrations. There were no significant differences in scores of students who sat in the front half or rear half of the 280-seat room, and no significant interaction between viewing distance and treatment for any of the examinations. In a replication study the following spring there were no significant differences between film and face-to-face students' scores on the five-minute examinations, and no significant differences or significant interactions otherwise.

Another group of students not involved in the experiment described above were invited to see the films of the demonstrations they had seen face to face. Only 11 per cent and 16 per cent of these students in the two semesters took advantage of this, and half of them saw only one film. The films were available 44 hours a week and were readily accessible to the students.

Thompson, Franklin James. Use of closed-circuit television in teacher education: relationship to professional attitudes and interests. Unpublished Doctor's dissertation, University of Minnesota, Minneapolis, 1960.

Problem: determine the relationships of student attitudes to direct classroom observation, observation by television, and observation by using selected films.

Sample: education students at Minnesota.

Subject taught: Introduction to Secondary Education.

Key variables: direct observacion in the classroom, observation by closed-circuit television, instructional films; attitudes toward children, presentation method, and teachers.

Students were assigned to different primary viewing methods sections. Students took the Miller Analogies Test and the MTAI. Analysis of variance run on these scores indicated no differences among sections. The television observations were of university high school speech and physics classes. The film observation section viewed selected instructional films. Direct observations were of classes in the university high school and other public high schools. For the first quarter of the course, each group watched five periods using its primary observation method and one period each by the other two observation methods. In the second quarter, students made only three observations; two using its primary observation method and one by an alternate method. Attitudes toward the course were measured by a course rating scale, and perceptions of directiveness in lectures and laboratory instruction and preferences for student-centered or subject-centered instruction were also obtained.

Analysis of variance and covariance run on appropriate scores revealed: (1) the observational method did not influence student attitudes toward children (MTAI scores), (2) students preferred direct observation to television and television to films, and (3) student attitudes were more related to differences in instructors than to various observational methods.

Throop, Joseph F., Lewis T. Assini, and George W. Boguslavsky. The effectiveness of laboratory instruction in strength of materials by closed circuit television. Troy, N. Y.: Rensselaer Polytechnic Institute, November 8, 1958. (Offset)

Problem: determine the relative effectiveness of ITV and face-to-face presentation.

Sample: 234 ITV students and 199 control group students.

Subject taught: 12 strength of materials lab experiments.

Key variables: learning and attitude; ITV and face-to-face presentation.

The ITV students had a 15-20 minute face-to-face presentation in groups of 50 to 100, followed by the ITV presentation, followed by a face-to-face discussion and help with problems. A talk-back system was available. The 199 student control-group were instructed in 12-student sections at the laboratory experiment site. Twelve quiz-scores, scores on a 30-item multiple-choice final examination, term-paper grades, and course grades were available from all students. Students also answered an attitude questionnaire.

Critical ratios indicated no significant differences between groups on the quizzes, term-paper grades, final exam scores, or final grades. Chi-square analysis indicated the face-to-face technique was significantly more effective in developing students' familiarity with machinery. There were no significant differences between groups on the teaching of instrumentation or of theory.

Students took an 18-item, seven response attitude questionnaire. The ITV students judged that the laboratory time was more efficiently used than the face-to-face students. The ITV group felt that the physical relationships of the various equipment aspects were not as clear as did the face-to-face students. The ITV group felt less confident than face-to-face students about retaining the material after six months. The ITV group felt somewhat more strain, and were more reluctant to ask questions than the face-to-face group. The face-to-face group strongly preferred face-to-face instruction, whereas the ITV group was about equally divided in their preference of presentation method.

Tiemans, Robert K. The comparative effectiveness of sound motion pictures and printed communications for the motivation of high school students in mathematics. USOE Project Number 459. Iowa City: State University of Iowa, 1962. (Offset) (Also unpublished Doctor's Dissertation, State University of Iowa, Iowa City, 1962)

Problem: compare the effectiveness of sound films and printed material to measure students' motivation.

Sample: 550 first-year algebra students in 17 Iowa schools.

Subject taught: algebra

Key variables: film and printed material presentations.

Algebra classes were divided into three groups: one group saw three 15-minute specially produced films designed to motivate students by practical applications of algebra, one group read three printed booklets based on the films but having little visual material, and a control group which received no special communication. All students were given a motivation inventory, and the Lankton First-Year Algebra Test, and their motivation was rated by their teachers, before and after the treatment. The motivation inventory had four parts. One part was like, neutral, and dislike scales of algebra, another was a semantic differential instrument having students rate three concepts (algebra, English, and science) on twelve scales, the third part had students rate their interest on 29 mathematic topics, and the fourth part (posttest only) had students indicate if they planned to take additional math courses.

Analysis of covariance technique indicated that the film group had significantly higher scores than the booklet group on attitudes toward algebra, the activity factor of the semantic differential, and the Lankton test. The film group had significantly higher scores than the control group on these measures plus the evaluative factor of the semantic differential. The booklet group had significantly higher scores than the control troup of the evaluative factor of the semantic differential. Teachers' ratings of work in algebra class correlated .93 with Lankton scores, but teachers' ratings of general behavior correlated low (around .20) with any of the criterion measures. Students' attitudes toward algebra and the potency, activity, and evaluative factors correlated between .48 and .64 with each other.

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Tintera, James B. Analysis of methods in which application of new communications media may improve teacher preparation in language, science and mathematics. USOE Project Number 008E. [n.p., n.d.] (Mimeographed)

Problem: determine the relative effectiveness of observation and conference, audio tape recordings and observation, and three kinescopes and observation.

Sample: 22 kindergarten and sixth-grade student teachers in East Lansing.

Subject taught: teacher observation.

Key variables: supervisor observation, supervisor observation and audio tape recordings, and supervisor observation and three kinescopes.

One-third of the sample was initially assigned to each one of the three treatment variables. Treatments were rotated through the course. Teachers took the MTAI, the Ryan Observation scale, an attitude scale of teaching problems, a teacher self-description scale, and were rated by their supervisors. The ratings and the Ryan scale were made twice; the other instruments were taken three times: before, in the middle, and after the treatment. Audio tape recordings were given to the supervisor and teachers within a day after they were made. The kinescopes were available to the supervisor and the teacher usually in a week.

There were no significant differences between age, sex, grade point average, educational background, and amount of previous teaching experience of the students in the sample used in the study and a sample of other students who might have been available for the study. There were no significant differences among student teachers' scores on any of the instruments among any of the three presentation treatments. However, after six months of professional training, teachers who had had audio tape or kinescope recordings had significantly higher scores on the instruments used than teachers in the control group. It seemed that personnel officers tended to be more greatly impressed with teachers who had had audio tape or kinescope recordings. Beginning salaries of control group teachers averaged $4050 and beginning salaries of experimental group teachers averaged $4175.

Toffel, George M. Effectiveness of instruction by television in teaching high school chemistry in Alabama schools. USOE Project Number 302H. University: University of Alabama, August, 1961. Audio-Visual Communication Review, 10 (1962), A-81-82. (Abstract)

Problem: determine the effectiveness of ITV to supplement teaching high school chemistry in Alabama.

Sample: 255 white and 79 Negro students in 10 white and five Negro schools.

Subject taught: high school chemistry.

Key variables: television and face-to-face presentation; achievement, ability level, laboratory facilities, and teacher qualification.

All students took the Anderson Chemistry Achievement Test at various points in the year.

Largely because some white schools in the control group would not participate in the experiment, white students not using ITV made higher scores than those using ITV. Negro students using ITV made higher scores than those not using ITV. White students having good teachers, good lab facilities, and having higher ability did better than students having poor teachers, poor lab facilities, and low ability. White males did better than white females. Negro students having good lab facilities, above-average mental ability, and above-average reading ability had significantly higher test scores than those students with poor lab facilities, below-average mental ability, and below-average reading ability. When both good teachers and good lab facilities were available, high-ability students made higher scores in face-to-face classes, and low-ability students made higher scores in ITV classes. When both ITV and face-to-face white students had good lab facilities but poorer teachers, face-to-face students tended to make higher scores. When both ITV and face-to-face Negro students had poor lab facilities but good teachers, the ITV students tended to make higher scores.

Torkelson, G. M. Teacher AV education via closed-circuit television. Audio-Visual Communication Review, 6 (1958), 188-199.

Problem: determine teacher and student attitudes toward ITV.

Sample: 130 students.

Subject taught: teacher education.

Key variables: in-studio presentation with monitors for magnification, large lecture room TV viewing only, small room TV viewing only, and large lecture room with instructor present and monitors used only to show a kinescope.

The same students viewed all four presentation methods. After each class period, students filled out an attitude questionnaire. At first this was anonymous, but because of facetious comments, students' signatures were required. This change nearly eliminated the facetious comments, yet did not lessen the directness of criticism or praise.

Sixty-three per cent of the students had taken a previous ITV course. Sixty-two per cent indicated they would avoid enrolling in another ITV course. Sixty-eight per cent felt the TV portions of the course were of some value. Sixty-two per cent preferred the small TV viewing rooms to the large lecture viewing room, but over 60 per cent preferred instructor and appropriate projectors in one large room over use of television. Eighty-seven per cent thought upper-level courses should not be taught on television. Eighty-one per cent felt ITV required more "gimmicks" to maintain attention than did face-to-face lectures, and 63 per cent replied yes to the question, did absence of color adversely affect your receptiveness.

Twyford, Loran. Film profiles. Instructional Film Research Reports (SDC 269-7-23). Port Washington, Long Island, New York: U. S. Naval Special Devices Center, 1951. Also, unpublished doctoral dissertation, Pennsylvania State University, 1950.

Problem: determine if subjective rating profile of instructional film could be considered a reliable measure of learning.

Sample: 276 students (106 high school, 170 college).

Subject taught: Precision Measuring Instruments.

Key variables: profiles of subjective rating of film per unit of time, objective test of material contained in film, correlation between these measures.

This experiment sought to discover whether a subjective rating of a film would correlate high enough with an objective test of the film's content to be a valid indication of the learning from the film. A graphic representation of the film's subjective rating was made by having subjects depress a key on a console in front of them, while viewing the film, which corresponded to their rating of the film. The console was part of an electrical response recording machine called a film analyzer. Each time a key was depressed a mark was made corresponding to the key on a sheet of continuously moving graph paper.

The three kinds of rating profiles investigated were based on the following methods of responding:

1. "I am learning from the film."
2. "I predict that my classmates are learning from the film."
3. "I like-dislike the film."

Procedure

Classes of high school juniors and seniors and college classes in beginning psychology and social psychology were randomly divided into seven groups. Each of the seven groups of a class followed a different one of seven procedures. Three of the procedures involved the continuous rating of an informational film. These three procedures yielded the three basic rating profiles:

1. A rating profile based on responses of "I am learning" (first showing).

2. A rating profile based on responses of "I predict learning" (first showing).

3. A rating profile based on responses of "I like-dislike" (first showing).

The same groups of students responded with the same judgments to a second showing of the same film, so that three "second-showing" rating profiles were produced:

1. "I am learning" (second showing).

2. "I predict learning" (second showing).

3. "I like-dislike" (second showing).

The other four procedures which included a control group which did not see the film, yielded three basic profiles representing learning from the successive intervals of the film as measured by objective tests:

1. Learning measured on Form A of a true-false test which contained items on all facts that might be learned from the film.

2. Learning measured by Form B of the test (true items in Form A were false items in Form B; false items in Form A were true items in Form B).

3. A combined test profile (based on the averaged scores from the two forms of the test mentioned above).

The rating profiles were compared with the objective test profiles to determine how closely high and low sections corresponded. Test profiles were also compared among themselves.

Results and Conclusions

1. The three objective test profiles all yielded substantially the same measure of learning. (Intercorrelations between the test profiles were not significantly different from each other.)

2. The relatively high correlation between the "I am learning" profile and the combined test profile seems to offer some promise that students, with reasonable accuracy, can report when they are learning from a film. ("I am learning" correlated .53 with the combined test profile.)

3. Students do not appear to improve in this ability simply by making the same kind of judgments during a second showing of the same film. ("I am learning," during a second showing of the same film correlated .52 with the combined test profile.)

4. "I predict learning" as a profile rating does not appear to have much promise as a prediction of learning. ("I predict learning," first showing, correlated .16 with the combined test profile.)

5. It does appear that students may need some practice in making this kind of rating and that they do improve somewhat during subsequent showings of the same film. ("I predict learning," second showing, correlated .38 with the combined test profile.)

6. There is little relationship between a profile based on "like-dislike" and a profile of tested learning. (All correlations between "like-dislike" profiles and test profiles were small and negative.)

Implications

Profiles based on ratings of "I am learning" by samples of a target audience seem to have promise as a method of measuring the learning which results from various sections of a film.

It is possible that the ability of audiences to rate learning from an instructional film may be improved through training. In such training the instruction given prior to rating may have considerable importance.

Ulrich, John Holway. An experimental study of the acquisition of information from three types of recorded television presentations. Unpublished Doctor's dissertation. State University of Iowa, Iowa City, 1955. Speech Monographs, 23 (1956), 123. (Abstract) (See also Speech Monographs, 24 (1957), 39-45.)

Problem: determine the relative effectiveness of viewing (a) kinescopes of a lecture, (b) a lecture with visual aids flashed on screen, (c) lecture with instructor handling visual aids.

Sample: 40 eighth-grade classes from Chicago.

Subject taught: food resources of Africa.

Key variables: lecture, and lecture with filmed or direct visual aids, learning.

Pupils were divided into four groups: one group saw a kinescope of the straight lecture, one group a kinescope of the lecture with the instructor manipulating visual aids, the third group saw a kinescope of the lecture with the visual aids flashed on the screen, and the control group saw no lecture. Pupils were administered an immediate and delayed (30 days) content posttest.

Analysis of variance and t-tests on content scores indicated that all three groups remembered more on both administrations than the control group. On the delayed posttest, there were no differences in scores between the three experimental groups. On the immediate posttest, both groups having visual aids had higher scores than the lecture only group (.05 level).

VanderMeer, A. W. Effects of Film-Viewing Practice on Learning from Instructional Films (SDC-269-7-20). Instructional Film Research Reports. Port Washington, Long Island, New York: U. S. Naval Special Devices Center, 1953.

Problem: Does prior experience in viewing instructional films help improve learning from additional films?

Sample: 182 ninth-grade high school students (99 female, 83 male).

Subject taught: General Science.

Key variables: California Test of Mental Maturity, Calvert Science Information Test.

Before this experiment, three groups of students in the Bellefonte [Pennsylvania] Public School eighth grade were taught General Science by three instructional methods. One group had been taught face-to-face, another by seeing instructional films only, and the third by seeing the films and using a study guide.[1] This study is a continuation of experimentation with this group.

This experiment consisted of showing four additional science films, which none of the group had seen before, to these students. Two tests were given: (1) the CTMM for a measure of intelligence, and (2) the CSIT for a measure of science achievement. An additional measure of information gain was received from specially constructed tests of the content of the films. One film was shown to all groups on the same day and all four films were shown in four consecutive days. Each class saw the films in the same room especially equipped for film viewing. Students

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[1] For a report of this study see A. W. VanderMeer, Relative effectiveness of instruction by films exclusively, films plus study guides, and standard lecture methods, SDC 269-7-13. Instructional Film Research Reports. Port Washington, Long Island, New York: U. S. Naval Special Devices Center, 1950, pp. 7-27 for abstract and discussion of this report.

2--VanderMeer, A. W.

were unaware of the experiment and were instructed that the films were just a part of their regular classroom instruction and the grades on the tests would be part of their grade in the course.

Data were analyzed by analysis of covariance adjusting for intelligence. Six of the ten comparisons between the films and study guide taught group and the face-to-face taught group were significant. Four of the ten comparisons between the film exclusively taught and the face taught group were significant. All significant differences favored the film taught groups.

The author concludes " . . . film viewing practice results in improvement of the ability to learn from other films of the same subject field."

VanderMeer, A. W. Color vs. black and white in instructional film. Audio-Visual Communication Review, 2 (1954), 121-134.

Problem: determine the relative effectiveness in learning from color and black and white films, and students' attitudes toward color and black and white films.

Sample: 500 students and 240 students from Bellefonte (Penn.) high school.

Subject taught: ninth- and tenth-grade science.

Key variables: five color and black and white films; verbal and non-verbal learning, retention, attitudes.

Two experiments were run. In the first, 500 students were divided into color film and black and white (prints made from the color originals) film groups. Each group had posttests immediately after each film, plus a sixth instrument (given six weeks later) over the whole series. (This had also been administered as a pretest.) The posttests included multiple-choice items as well as non-verbal items (identification of slides, etc.).

Two kinds of tests were used: non-verbal and verbal. Non-verbal tests were identification on maps, identification of sulphur types in glass vials, and slide pictures of snakes. Verbal tests were multiple choice. Test items were classified as to whether their source was in (1) the film's audio but not on the screen, (2) on the screen but not in the audio, (3) both (1) and (2). Each test, therefore, had a total score, three part scores related to color, and three part scores related to audio, being on the screen, or both.

A multiple-regression equation controlled for differences on scores on the CTMM.

On the immediate posttests, generally there were no differences in students' scores on the verbal instrument between the two groups, though means of the black and white group tended to be higher. On one film, the mean verbal score of the color groups was significantly higher (.05 level).

For two of three of the non-verbal immediate tests, the black and white group means were significantly higher (.01 level) than the color group means.

For the delayed posttests, three out of five comparisons of verbal test scores were significant (.01 level), all favoring the color group. There were no significant differences between delayed non-verbal posttest scores between color and black and white groups.

The second experiment, run with 240 students, was much like the first except that one group saw films A and B in black and white and saw C and D in color, and the other group saw films A and B in color and C and D in black and white. Testing was similar except that the delayed posttest was omitted. Test scores were transformed into standard scores. Some sex differences were found but over-all there were no differences in learning between black and white and color films.

Students preferred color to black and white films, but there was little correlation between preferring color films and learning more from color films.

[Material in this abstract also found in:

Instructional Film Research Reports, Technical Report SDC 269-7-28
(Port Washington, N. Y.: U. S. Naval Special Devices Center) 1952.]

Van Horn, Charles and Beberman, Max. A study to determine the relative effectiveness of the use of a series of filmed demonstrations in teacher education for a new high school mathematics curriculum. USOE Project Number 158. Urbana: University of Illinois [n.d.] (Mimeographed)

Problem: determine the relative effectiveness of filmed and direct observations in training teachers.

Sample: 68 high school mathematics teachers.

Subject taught: mathematics (beginning algebra)

Key variables: film and direct observations, learning, attitudes.

Twenty half-hour films were prepared from footage from shooting an algebra class. Sixty-eight teachers were alternately assigned to either the film group or to the direct observation group. All teachers took five subject matter competence tests. The teachers' pupils took three tests and eighteen quizzes during the school year. Rank-ordering of the different mathematics topics was also obtained.

Test and quiz scores indicated that pupils of the film-trained teachers had a wider range of ability than pupils whose teachers had live observational training but there is no reason to believe that this difference is related to the teacher's training.

Analysis of variance and t-tests revealed no significant differences in scores on the five subject matter instruments between groups. No differences were found in achievement scores of pupils of the two groups.

Kendall's W and rank-order correlations indicated that film observation provides a more realistic basis for teachers' expectations than does live observations, but that teachers should be warned against imitating the teaching behavior they saw on film.

A Thurstone-type attitude scale to determine pupils' attitudes toward mathematics did not show any attitude shifts, either between groups or between administrations.

Vestal, Donald Adams. The relative effectiveness in the teaching of high school physics of two photographic techniques utilized by the sound motion picture, Abstracts of Doctoral Dissertations, The University of Nebraska, Vol. 13. Lincoln: The University of Nebraska, 1952. Pp. 221-227.

Problem: compare learning from animation films with learning from direct photography films.

Sample: students in seven Nebraska high schools.

Subject taught: electricity.

Key variables: animated films and direct photography films, learning, and ability level.

Two instruments were developed. One (split-half r = .88) assessed the content of the animation film, and the other (split-half r = .90) the content of the direct photography film.

Students viewing each of the two film presentations got significantly higher scores on the posttest than the pretest. The mean gains between the animated and direct group did not differ significantly. Students who ranked in the upper quarter made gains on the direct photography instrument which were significantly greater than those on the animation test.

Voorhies, William Thompson. An analysis of pupil and college student opinions concerning the use of closed-circuit television for observation of classroom instruction at Indiana University. Unpublished Doctor's dissertation, Indiana University, Bloomington, 1960.

Problem: determine the relative acceptance of college students and high school students of television as a tool for observation, and to determine attitudes toward certain procedures used in television observation.

Sample: 86 college students in mathematics, language and social studies methods classes at Indiana.

Subject taught: teaching methods.

Key variable: observation by television, attitude.

For one semester, observations of university high school classes were made by closed-circuit television, and attitude instruments were devised to assess reactions of students.

Eighty-six college students took three attitude questionnaires and a numerically scaled check list, and were interviewed. Opinions of 175 high school students were determined by two attitude questionnaires.

Students felt that the simultaneous presentation of three television monitors each carrying a signal from a different camera were better than fewer. There was no agreement to who should "call the shots." Direct observation was judged by the students to be slightly better in some respects than television observation. High school students accepted their "guinea-pig" role well at first, but became less favorable to television over time.

Vuke, George Joseph. Effects of inserted questions in films on developing an understanding of controlled experimentation. Unpublished Doctor's dissertation, Indiana University, Bloomington, 1962.

Problem: compare the effectiveness of learning from films with and without inserted questions.

Sample: 81 seventh-grade science students.

Subject taught: requirements of a good experiment.

Key variables: inserting questions, learning.

Two films were prepared; one of ten minutes and having eighteen questions and another film of 8 1/2 minutes with no questions.

A 45-item achievement instrument was constructed (r = .84), and was given as a pretest, posttest, and delayed (two week) posttest.

Students were randomly assigned to two groups, each group viewing one of the films.

Mann-Whitney U tests and t-tests revealed no significant differences between the mean scores of either group for the posttest or for the delayed posttest. This was true even when the students' scores were analyzed by ability level. Scores between the pre- and posttest increased significantly for both groups, with higher-ability students making larger gains than lower-ability students.

Walton, Norma Ruth. A pilot study of student attitudes in a closed-circuit television course by use of stimulated recall. Unpublished Doctor's dissertation, Michigan State University, East Lansing, 1963.

Problem: determine attitude, learning and participation differences between students taking a course by ITV and students in the originating lecture room.

Sample: 122 students.

Key variables: face-to-face and television presentation, concentration, participation, attitudes, learning.

Students were randomly assigned to the in-studio (face-to-face) or ITV treatment groups. Measures of concentration on the subject matter were obtained by tape recording four lectures, playing back portions and asking the students to indicate what happened next. Participation measures were obtained from instructors' ratings of students on a three-point scale. An attitude toward the course scale was also administered.

There were no differences between the groups on scores of any of the above measures, or on achievement in the course.

Washington [Maryland] County Board of Education. Closed Circuit Television: Teaching in Washington County 1958-59, a Progress Report. NAEB Research Fact Sheet, Series I, 81, NAEB Journal, 19 (1960), 1-4. (Abstract)

Problem: effectiveness of TV teaching.

Sample: 16,500 students in elementary and secondary school.

Subject taught: not given.

Key variables: student reactions to TV instruction.

Report of tentative findings from third year of a five-year project to teach each student in the system at least one hour a day by closed-circuit TV. Fifty-item questionnaire distributed to 32 per cent of students produced the following results: (1) students accept TV as means of instruction, (2) lack of communication with TV teacher is not a problem, (3) 87 per cent of respondents said a follow-up discussion after telecast was helpful, (4) 58 per cent thought they learned more from TV instruction than from face-to-face instruction, but 68 per cent said they had to pay closer attention in TV classroom, (5) students reported that they spent more time studying, reading in library, and participating when taught by TV than when taught by face-to-face methods.

Questionnaire given to families of students and community leaders showed that a high percentage of families and leaders approved of TV instruction. Eighty per cent of classroom teachers favored the present system of TV instruction and wanted it continued.

Waters, Grace J. and Frances Hardy. The Norfolk City Experiment in Instructional Television: The Big Picture, September 1957 to June 1960. Norfolk, Virginia: Educational Television Project, Norfolk City Public Schools [1960].

See Johnson, Grace Nichols and Frances Hardy. The Norfolk City Experiment in Instructional Television: The Big Picture, September 1957 to June 1960. Norfolk, Virginia: Educational Television Project, Norfolk City Public Schools [1960].

Wedberg, Desmond P. A comparative investigation of the instructional and administrative efficiency of various observational techniques in the introductory course in education. USOE Project Number 685. Los Angeles: University of Southern California, 1963. (Offset) (Also unpublished Doctor's Dissertation, University of Southern California, Los Angeles, 1963)

Problem: determine the relative effectiveness of observation methods.

Sample: 151 students.

Subject taught: observation.

Key variables: direct observation for 30 hours; direct observation for ten hours after ten hours of programed observation of sound films, sound filmstrips, slides and tape, and tape recordings; ten hours of programed observation of sound films, sound filmstrips, slides and tape, and tape recordings; learning.

Students took a 60-item multiple-choice content pretest (K-R $r = .53$). Also available were SCAT scores, Professional Aptitude test scores, teaching aptitude scores, and environmental pretest scores. Students also completed a classroom observation report, and experimental students filled in an observation program evaluation checklist. Students were randomly assigned to one of the three treatment groups.

$\underline{t}$-tests indicated that scores on the content posttest of students in both the experimental treatments were significantly (.01 level) greater than scores of students in the control group, but were not significantly different from each other.

Weisgerber, Robert Arthur. The effect of science motivational films on the attitudes of secondary school pupils toward the field of science. Unpublished Doctor's Dissertation, Indiana University, Bloomington, 1960.

Problem: determine the effect of science motivational films on interests.

Sample: eighth- and tenth-grade students from two schools.

Subject taught: science.

Key variables: subject matter and motivational films, attitudes, and attitudes over time.

Students took the Kuder Preference Record (Vocational), a course preference scale, a science attitude scale, and a business attitude scale as pre- and posttests. Many students were also interviewed.

Statistics used were the Mann-Whitney U test and chi square.

It was concluded that eighth-grade students in a school offering a required, academic or non-academic science course did not significantly change their attitudes about science classes, about seeing science films, about scientists' work, or about science teachers after seeing the science motivational films. Motivational films exerted a significant influence on students' preference for taking later science courses. The films' purposes were recalled a month later.

On the other hand, tenth-grade students in a school offering optional continuing science courses had significantly higher attitudes about science classes after the motivational films. Their attitudes about science films, scientists' work, or science teachers did not change after viewing the motivational films. Interest in science activities as measured by the Kuder Vocational increased significantly after viewing the motivational film.

Wells, David Wayne. The relative effectiveness of teaching first year algebra by television-correspondence study and teaching first year algebra by conventional methods. Unpublished Doctor's dissertation, University of Nebraska Teachers College, Lincoln, 1958.

Problem: determine the relative effectiveness of teaching algebra by television-correspondence and by face-to-face methods.

Sample: 110 television-correspondence and 83 control students in Nebraska high schools.

Subject taught: first-year algebra.

Key variables: television-correspondence and face-to-face presentation; learning and ability level.

Correspondence materials included course organization, reading and study assignments, and instructions for completing assigned work. The television portion consisted of daily 30-minute television lessons. Local proctors in each high school administered tests and answered some questions.

All students took the Cooperative Mathematics Test for Grades 7, 8, and 9, the California Algebra Aptitude Test, and the Henman-Nelson Test. The Cooperative Algebra Test was administered as a final exam.

Students in the television-correspondence group did as well as students in the control group. Experimental students whose local proctors were not certified teachers of mathematics did as well as experimental students whose local proctors were certified to teach mathematics. Both high- and low-ability students in the control group did as well as high- and low-ability students in the experimental group.

Westley, Bruce H. and Lionel C. Barrow. Intelligence and the effectiveness of radio and television. Audio-Visual Communication Review, 7 (1959), 193-208.

Problem:	determine the relative effectiveness of ITV and radio on learning.
Sample:	228 sixth-graders in four Madison, Wisconsin schools.
Subjects taught:	current events: the presidency, congressional issues, the Fuchs expedition, and the Caribbean and Venezuela.
Key variables:	learning, retention, and ability level; radio and TV presentation.

All students took the CTMM and were assigned on a stratified random basis to experimental and control groups. The programs were 15 minutes long, the radio and TV versions were broadcast simultaneously. Students' CTMM scores determined whether they were classified into low (<107), medium (107-116), or high (>116) ability levels. A 24-item multiple-choice achievement test was administered immediately after each program, and a 32-item (eight items from each of the four previous tests) retention test was administered six to ten weeks later.

Analysis of variance indicated that ITV students learned significantly more factual information than radio students, but on a six-weeks retention test, there were no significant differences between groups. The average ability group did not learn significantly more from ITV. Verbal intelligence made a larger contribution than non-verbal intelligence to factual learning.

Westley, Bruce H. and Lionel C. Barrow, Jr. Exploring the news: a comparative study of the teaching effectiveness of radio and television. Research Bulletin No. 12. Madison: University of Wisconsin Television Laboratory, May, 1959. (Mimeographed) (See also Audio-Visual Communication Review, 7 (1959), 14-23.)

Problem: determine the relative effectiveness of radio and ITV presentation.

Sample: 228 sixth-grade pupils in eight classes of four Madison public schools.

Subject taught: News programs.

Key variables: learning and retention; television and radio presentation, discussion after programs, and topic.

Pupils in each of the eight classrooms were randomly assigned to radio or television treatments after stratification by CTMM scores. All pupils heard all four 15-minute programs.

Analysis of variance run on 24-item immediate recall tests indicated that scores of ITV pupils were significantly higher (.01 level) than scores of radio pupils. Pupils with higher IQ scores obtained significantly higher recall scores than pupils of lower ability. There were no significant differences in recall scores of groups which had a follow-up discussion after the programs and those which did not. There were no significant differences in scores of television and face-to-face pupils on a six week 132-item retention test, administered six to ten weeks later, although program and intelligence differences were still present. The number of words used to describe a theme and the method of presentation were both significantly related to the frequency of first mentions in response to an open-ended question.

When pupils were divided by high-, medium-, and low-intelligence scores, analysis of variance showed a significant relation between intelligence scores and immediate recall scores, and a significant relation between method of presentation and immediate recall scores, but no significant interaction between method of presentation and intelligence. Analysis of variance showed no significant differences between radio high-, medium-, and low-ability groups and ITV high-, medium-, and low-ability groups on delayed recall scores.

Teachers' preferences for radio or ITV were equally divided.

Westley, Bruce H. and Harvey K. Jacobson. Modern math on TV: Its impact on pupils and teachers. Research Bulletin No. 15. Madison, Wisconsin: University of Wisconsin Television Laboratory, December 15, 1963. (Mimeographed) See also Audio-Visual Communication Review, 10 (1962), 179-185, 328-333, and 11 (1963), 47-60.

Problems: determine pupils' and teachers' attitudes toward ITV, and determine pupils' attitudes toward teacher and courses.

Sample: 33 participating and 17 nonparticipating teachers (86.2 per cent return of a mailed questionnaire) of fourth- and ninth-grade mathematics in Madison public schools; 234 fourth- and ninth-grade pupils.

Subject taught: mathematics.

Key variables: grade level, participation in ITV; attitudes.

Fifty teachers were sent a 55-item Likert-type test of attitudes toward ITV. A factor analysis of their responses indicated ten factors: challenge-threat, economy, instructional side-benefits, partnership, responsiveness, parental influences, security, invidious comparison, experimental attitude, and in-service training.

The teachers generally felt favorable toward ITV (as in the instructional side-benefits factor), and also felt secure and irreplaceable (as witnessed by the security factor and a rejection of the idea of threat and invidious comparison).

Analysis of variance run on mean-item scores between participating and nonparticipating groups resulted in 16 (of a possible 55) F ratios that were significant at the .05 level or greater. In all 16 the participating teachers were more favorable than the nonparticipants.

Analyses of variance run on mean total scores indicated that participants were significantly more favorable toward ITV than nonparticipating teachers, (.01 level), and that teachers of the fourth grade were significantly more favorable than teachers in the ninth grade (.05 level). (Not only were the two courses at different levels, they were taught by different TV teachers.) There were no significant differences in attitude scores between teachers having a bachelor's degree or less and teachers having a master's degree, and there were no significant differences in attitude scores among teachers who had been teaching for 1-4 years, 5-15 years, or 16-40 years.

Fourth-grade teachers tended to be more favorable toward ITV, regardless of whether or not they were participants.

Pupils were told that next year they could take mathematics either by ITV or face-to-face methods, and were told to indicate their preference, and why. Thirty-eight per cent chose ITV, 61 per cent chose face-to-face instruction, and one per cent were undecided. The authors found that less than 40 per cent of the reasons why were favorable to ITV. The largest number of reasons concerned the course content, and the next largest number concerned the medium of instruction. The reasons given for favoring ITV dealt with course materials and assignments, and the reasons given for favoring face-to-face instruction dealt with the length of the ITV courses and the lack of discussion in ITV courses.

Pupils of one teacher were significantly more favorable toward ITV (.01 and .001 levels) than the pupils of two other teachers.

Westley, Bruce H. and Harvey K. Jacobson. Instructional television and student attitudes toward teacher, course, and medium. Audio-Visual Communication Review, 11 (1963), 47-60.

Problem: determine pupils' attitudes toward the course, teacher, and related concepts.

Sample: 503 ninth-grade pupils in Madison, Wisconsin schools in 1961.

Subject taught: algebra.

Key variables: attitudes toward ITV and the TV teacher; ITV and face-to-face presentation.

Two hundred thirty-four students saw a year-long course "Patterns in Mathematics"; 269 were taught algebra by face-to-face lectures. Pupils took a semantic differential instrument with 12 concepts (the ITV group's instrument had 14 concepts), having 17 adjective scales.

ITV pupils had more favorable attitudes than face-to-face pupils, when scales for each of the three dimensions (evaluative, potency, and activity) were combined (.0001, .0001, and .02 levels by sign tests).

Generally, the ITV group had more favorable attitudes toward course content concepts (such as Proof and Linear Programing) and toward their own classroom teachers, than the face-to-face group. The ITV group also rated their own teachers more favorably than they did the TV teacher. The ITV group rated their textbook less favorably than did the face-to-face group. ITV pupils rated the concept Mathematics on Television more favorably than did face-to-face pupils.

Westley, Bruce H. and Joseph B. Mobius. The effects of "eye-contact" in televised instruction. Research Bulletin No. 14. Madison: University of Wisconsin Television Laboratory, December 15, 1960. (Mimeographed)

Problem: determine the effects of eye-contact on students' attitudes.

Sample: 51 women's dormitory residents.

Subject taught: computer applications.

Key variables: high, medium, and low eye-contact; attitudes.

Paid female students were randomly assigned to one of three groups. Each group received all of the three treatments, on three consecutive nights. The high, medium, and low eye-contact treatments were defined by having the speaker look at the take lens 90 per cent, 40-60 per cent, and 10 per cent of the time.

All three speeches were video-taped. Pictures were secretly taken of each viewing group at one-minute intervals. The average of all these observations provided a group attention score. Immediately after the picture was taken, a bell rang and students indicated their interest at that point on a seven-point scale. Students filled out a semantic differential form after three of the speeches, and also took a multiple-choice information test over the program's content.

Analyses of variance showed no significant differences attributable to eye-contact variations in attention, learning, or interest; they did show differences among groups despite randomization procedures.

Westover, Frederick L. et al. Report evaluating the results of teaching Accounting I by means of closed-circuit television presentation. University: University of Alabama, September 6, 1958. (Mimeographed)

Problem: determine the relative effectiveness of face-to-face and ITV presentation.

Sample: about 275 students at the University of Alabama.

Subject taught: Accounting I.

Key variables: learning and attitudes; face-to-face and ITV presentation.

Students were divided into three groups: (1) a group of five sections receiving accounting by ITV, (2) a group of one section, taught by the same teacher, receiving accounting by face-to-face presentation, (3) a group of six sections taught face-to-face by different instructors. The ITV sections had 2 ITV hour-long presentations each week, and one face-to-face two-hour laboratory session each week. All students took six 30-minute tests, a two-hour mid-term and a 2 1/2 hour final examination. About half the course grade was based on objective questions and half on problems. The objective tests used were prepared by the author of the textbook. *t*-tests between experimental and control groups on freshman placement algebra, reading, SCAT quantitative, verbal and total scores indicated no significant differences between groups on any of the measures.

Analyses of variance conducted between experimental and control groups on final examination scores and on average course scores indicated no significant differences between groups. Chi-square indicated no significant differences between groups in the number of dropouts during the course. ITV and face-to-face students tended to make about the same grades and to do as well (or as poorly) on the following course, Accounting II.

Face-to-face students tended to rank Accounting I as more preferable than did ITV students. Students indicated they would prefer for Accounting II to be a face-to-face presentation. Face-to-face students thought the instructor's lectures were more effective than ITV students did, but all students thought that the laboratory sessions were sufficiently helpful in answering questions.

Wetter, Allen H. and Martha Gable. Report of the National Experiment of Television Teaching in Large Classes. 1957-58. Philadelphia Public Schools. 1958. NAEB Research Fact Sheet, Series I. 49, NAEB Journal, 18 (November 1958), 1-4 (Abstract)

Problem: comparative effectiveness of television and face-to-face teaching.

Sample: 250,000 students.

Subjects taught: social, biological, and physical science.

Key variables: TV teaching, face-to-face teaching, learning.

As part of the Ford Foundation and the Fund for Advancement of Education project, students in two elementary, four junior high, and three senior high schools received part of the weekly instruction by open-circuit television. Student achievement was compared on the basis of standardized tests administered to the students taught by TV and similar groups of students taught the same subjects by face-to-face methods.

Results. The authors reported that (1) a majority of the students learned as much, or more, than if they had been taught face-to-face, (2) more study is needed to determine what is actually learned by televised instruction because teachers reported that they felt intangibles were being taught by TV that were not measured on tests.

(Study also includes description of the administrative structure of the project and the problems encountered during the first year's operation.)

Wetter, Allen H. and Martha Gable. Report of the National Experiment of Television Teaching in Large Classes. 1958-59. Philadelphia Public Schools, 1959. NAEB Research Fact Sheet, Series I, 77. NAEB Journal 18 (November 1959), 1-2. (Abstract)

Problem: comparative effectiveness of television and face-to-face teaching.

Sample: 15 schools (8 continued from previous year).

Subjects taught: social studies, biology, mathematics, language arts.

Key variables: TV teaching, face-to-face teaching, learning.

This is a continuation of the National Experiment in TV Teaching for Large Classes. Subjects were taught by TV and face-to-face methods. Comparisons were made on standardized tests given to both groups.

Results. (1) Standardized tests indicate that TV students did significantly better in Grade 5 science than face-to-face taught students. In language art, face-to-face students were slightly better. (2) Junior High School students taught by TV were significantly better in mathematics than face-to-face taught students. (3) Senior High School students taught by TV did slightly better than face-to-face taught students in biology. (4) 105 high school students would choose to take biology again by TV, 18 would choose face-to-face, and 10 would not care according to an opinion questionnaire. (5) High school students in consumer mathematics did slightly better when taught by TV than when taught face-to-face.

(Study also contains a descriptive report of the administration of the second year of the project.)

Wickline, Lee E. The use of motivational films to favorably change the attitudes of high school students toward science and scientists. USOE Project Number 729. (Charleston): West Virginia Department of Education, July, 1962. (Offset)

Problem: determine students' attitude change as a result of seeing motivational films.

Sample: tenth, eleventh, and twelfth grades.

Subject taught: science.

Key variables: attitude, information about scientists or science.

Experimental students at each level were those enrolled in biology, chemistry, or physics respectively. Control students in each level were non-film biology students, non-film chemistry and American history students, and non-film physics and sociology students at the tenth, eleventh, and twelfth grades respectively. All students took the Allen Attitude Scale and the Facts about Science test as pre- and posttests. Experimental students received ten Horizons of Science films, one each week.

Analysis of variance rejected the idea that the control and experimental groups were from the same population on Facts about Science pretest scores (.01 level).

Attitudes of experimental students as measured by the Facts about Science showed a non-significant positive change from pre- to posttest. Attitudes of control students as measured by the Facts about Science test changed significantly (.01 level) to a more negative position from pre- to posttest. Generally there were no significant differences between pre- and posttest scores for males or females, except for control group males, who changed significantly more negatively. There were no significant differences between pre- and posttest scores for students planning to take additional courses, except for students in the control group who changed significantly more negatively.

There were no significant differences between pre- and posttest scores for either the experimental or control groups on the Allen test.

Williams, D. C., J. Paul and J. C. Ogilvie. Mass media, learning and retention. Canadian Journal of Psychology, 11 (1957), 157-163.*

Problem: comparative effectiveness of TV, radio, print, and face-to-face teaching.

Sample: 108 second-year undergraduates at University of Toronto.

Subject taught: anthropology.

Key variables: TV teaching, radio teaching, print teaching, face-to-face teaching, learning, retention.

One hundred eight students in the college were randomly divided into four groups in a stratified sample so that each group had an equal number of students with high, low, and average accumulative school grades. Each of the four groups was assigned to one medium of instruction: TV, radio, reading or face-to-face. The examination to be given after instruction was counted as part of their grade in the course to insure uniform motivation.

A lecture was delivered in the TV studio in the presence of the face-to-face group. The radio group heard the audio portion of the lecture and the TV group heard and saw a telecast of the lecture. Mimeographed copies of the lecture were given to the reading group to read and study during the time the other groups were receiving the lecture. No note-taking was allowed in any group.

Immediately after instruction an examination of 19 multiple-choice questions and one essay question was given to all groups. Eight months later the same examination was given to all groups as a measure of long-term retention. (A confounding event may have occurred in that the kinescope recording of the lecture was shown over one of the local TV stations before the delayed posttest, but the authors assume this effect was randomly spread over all methods of instruction groups.)

Results. Analysis of variance technique showed significant differences between the groups. Achievement also was found to be significant. A "t" test was performed between the means of the groups on the immediate post-test. The data are tabulated below:

Group	n	Mean	p
TV	27	14.7	
Radio	27	13.2	.01
Reading	27	12.4	.05
Face-to-face	27	12.3	nsd

2--Williams, D. C., J. Paul and J. C. Ogilvie

On the delayed retest eight months later, each group scored significantly lower and there were still significant differences between groups. The most noticeable change was the movement of the face-to-face group up from last place to second place. The medium used made significant differences in the amount of material retained since TV, radio, and reading ranked in the same order on both tests.

Conclusions. Media do influence retention in terms of immediate and delayed retention tests. The superiority of the TV group over radio and reading reconfirm previous experiments showing that two sense modality presentations are more effective than one sense modality presentations. The studio conditions during the televising of the lecture presented such environmental distractions that the authors chose to withdraw any conclusions from the performance of that group.

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*Earlier reports of this study are found in:

Paul, J. and J. Ogilvie. Mass media and retention. Explorations, 4 (1955), 120-123.

Williams, D. C. Experiment in communication. Explorations, 3 (1954), 75-82.

Williams, Richard Henry. An analysis of the importance of format to educational television programs. Unpublished Doctor's dissertation, University of Wisconsin, Madison, 1956.

Problem: determine which of four suggested formats was most effective in presenting information and maintaining audience interest.

Sample: four groups of parents and teachers.

Subject taught: utilization of sixteen millimeter film clips.

Key variables: interest, information; expert, expert plus teacher, expert plus parents and expert plus children presentations.

Two experts each made four fifteen-minute kinescopes discussing 16mm film utilization, using four different formats: (1) expert alone, (2) expert and fifth and sixth grade children, (3) expert and two parents, and (4) expert and a teacher and a school administrator. Each set of four programs was shown to four groups of parents and four groups of teachers.

Interest was measured by a forced-rank instrument and an audience response device; information was measured by a forced-rank instrument and two content points. On the forced-rank interest instrument, the results were: (2), (3), (4), (1) preferred from high to low order. On the forced-rank information instrument the results were (4), (2), (1) and (3). The audience response meter reading showed no significant differences. The author based his conclusion of finding significant differences on the ranking technique.

Wittich, Walter A. Off-camera: A pictorial glimpse of AV-TV. An investigation and evaluation of more efficient ways of training teachers to improve their day-to-day classroom learning activities and procedures through the uses of audio-visual media. USOE Project Number 015. Madison, Wisconsin: The University of Wisconsin, June, 1961. (Mimeographed)

Problem: determine the effectiveness of ITV lessons designed to improve teachers' use of and attitudes toward AV materials.

Sample: 625 teachers.

Subject taught: using AV materials.

Key variables: teachers' attitudes and performance.

Forty-two half-hour kinescopes of AV materials were shown three times a week to six areas in Florida and the Midwest. Four scales determined the effect of the ITV course on daily practices of the teachers, changes in attitudes toward AV materials, teachers' opinions of the course, and whether the course was reaching the teacher it was designed for.

The Dixon-Mood sign test and _t_-tests revealed the course had a small but significant positive effect on using AV materials in the classroom, that teachers were favorable toward the course, and that posttest attitude scores toward AV materials were higher than pretest scores.

Witty, Paul and James P. Fitzwater. An experiment with films, film-readers and the magnetic sound track projector. Elementary English, 30 (1953), 232-241.

Problem: effect of film viewing on improving reading skills.

Sample: 159 grade students.

Subject taught: reading improvement.

Key variables: learning from conventional reading instruction, learning from film reading instruction, student and teacher opinions.

Experiment was conducted for the second semester of the 1951-52 school year. For the first half of the semester students were taught reading improvement in the conventional manner with basal readers and supplementary materials. During the second half of the semester students were taught reading by seeing four films and then reading the accompanying film reader.

All pupils were given standardized tests of reading at the beginning of the semester and the change in instruction point (mid-semester) and at the end of the semester. The films were especially designed for teaching reading improvement and the magnetic sound track projector was used to record student language development.

All students were given the California Reading Test in differing forms as the criterion measure. Students were matched on Kuhlman-Anderson Test of Mental Ability and the Northwestern University Interest Inventory.

Results. (1) The CRT was determined too easy for grade 2 students and therefore interpolation of results was necessary. Authors state that significant gains in ability were made for both types of instruction, but gains during the experimental period were greater than gains during the control period. (2) Teacher reactions to the experimental method were strongly in favor of film method of teaching reading. (3) Student reaction was strongly in favor of the film method.

Wolgamuth, Dale. A comparative study of three techniques of student feedback in television teaching: the effectiveness of an electrical signal feedback system. USOE Grant Number 749096. Washington, D. C.: The American University, December 11, 1961. (Offset)

Problem: determine the relative effectiveness of microphone talk-back, vicarious feedback, and electrical signal feedback.

Sample: 80 undergraduate students at the American University.

Subject taught: Group Dynamics.

Key variables: feedback method, learning, retention, and attitudes toward ITV.

Students were randomly assigned to one of the three feedback conditions or a control group. The electrical signal feedback condition provided each student with a box having four buttons to indicate various responses. Under this condition the teacher was made aware of student response only if one-fifth of all the buttons were pushed. The vicarious group was theoretically represented by a studio class. The control group had no feedback. All groups saw five 30-minute lectures. Each group saw a different series of lectures.

Students took three pretests: the CTMM, an adult scale, and a subject matter inventory. Following the last ITV lecture, students took another subject matter inventory and an attitude questionnaire.

There were significant differences (.05 level) among CTMM means among groups, but no significant differences among pretest subject matter scores. Analysis of covariance indicated a significant difference (.05 level) among groups on posttest subject matter scores when adjusted for IQ scores. Analysis of covariance indicated no significant differences among groups on posttest subject matter scores when adjusted for pretest subject matter scores, and no significant differences when adjusted for both pretest and IQ scores. Analysis of variance indicated no significant differences among groups on retention scores.

Analyses of variance on students' attitude of teacher effectiveness or televised teaching indicated no significant differences among groups, but indicated significant differences (.05 level) among groups on teacher's personal attractiveness and value of a feedback system. Ss in the control and electrical signal feedback group seemed to have the most favorable attitudes. The electrical signal students had the most favorable attitudes toward the value of a feedback system. In attractiveness of televised teaching, the largest difference was between the control and electrical signal feedback students.

Zuckerman, John V. Predicting film learning by pre-release testing. Audio-Visual Communication Review, 2 (1954), 49-56.

Problem: determine the effectiveness of predicting learning from a film with a filmstrip based on the film.

Sample: student pilots at Williams AFB.

Subject taught: jet airplane F86 A.

Key variables: film and filmstrip presentation, learning.

Trainees were randomly assigned to film and filmstrip treatments. The film group saw a color film; the filmstrip group saw a 262-frame black and white filmstrip along with a recording of the film's sound track. Both groups took a 26-item multiple-choice instrument based on key points in the film and filmstrip.

Pearson r's were computed on posttest scores of the two groups (.80), absolute gains (.71), adjusted absolute gain scores (.94) and adjusted relative gain scores (.89). It was concluded that the filmstrip could be used to predict learning from this type of film.